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ORIGINAL ARTICLES

MANAGEMENT AND CONTROL OF VENEREAL DISEASES

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Salesmanship, which is coming more and more to be looked upon as practical or applied psychology, teaches that among the most important moments in the contact of salesman and customer, in addition to the obviously all important and essential one of the sale, are those of approach and departure. The same things are to a large extent true of the practice of medicine, and in no field of professional work is this more important than in that of venereal diseases. How important the psychology of the physician's contact with his patient is, has been well illustrated by one of the larger urological clinics of Boston where it was found on investigation that less than four per cent. of the patients on the service of one surgeon returned after the first three visits, while on the service of another approximately eighteen per cent. came back more than three times. The need of clinic control and management seems so obvious that they need no discussion, but some of the factors making this possible may well be emphasized.

Patients afflicted with venereal disease are notoriously independent, indifferent and unreliable, and, therefore, difficult to hold to their courses of treatment, both in the public clinic and in the private office. Many of them are not impressed with the seriousness of their condition, and a fair number of them, being wanderers over the face of the earth, are prone to go from clinic to clinic just as in private practice they are apt to go from one physician's office to another. It might be well to try for a moment to analyze the various factors entering into the early contact of the venereal patient with his physician and which may help in insuring a reasonably constant attendance and attention to the details of treatment.

The average patient, I believe, is much impressed by the careful and sympathetic taking of his medical history. He or she usually comes to the office or clinic disturbed in mind and frequently in conscience, so that the taking of brief notes on the family history often makes a welcome introduction to the more personal confidences connected with the case. Some of our patients are more or less terror-stricken at the thought of going to the doctor, and we believe that the few moments devoted to taking a family history, which many of us as house officers thought to be absolutely useless and time-consuming work, will well repay us, for these moments often give the patients an opportunity to study the physician and to find that he is not after all so difficult to talk to, and is not so stern as they had imagined. Possibly the fact that he is interested in what father or mother, brother or sister, husband, wife or children, died of makes them feel that there is after all a kindly and softer side to the doctor than they had suspected. Then, too, in the increasingly large number of cases of latent syphilis which are reaching us as a result of routine Wassermann tests in connection with complete physical examinations, and because of the more recently emphasized point of view that syphilis is not so much a disease of the individual as of a group, the taking of the family histories assumes an increased importance; indeed, it has become absolutely essential in working out the problems of the marital contacts and the hereditary cases. The taking of the history of past illnesses, operations and accidents gives us a chance to lead up to another important matter, the history of previous venereal attacks, not too easy a subject for some of our sensitive patients to talk about. There is usually no difficulty then in taking up the matter at hand and as a rule a confidential relationship has been established between the physician and patient that will lead to such confidences as will make the history of the case entirely clear. However, human nature being what it is, we still hear occasionally the time-honored explanation of the dirty towel, the toilet seat and the soiled bathing suit offered as a cause of the infection, but a knowledge of the failings of mankind will usually lead to the truth.

With the completion of the history, a careful physical examination, which is so essential in every case, will impress the patient with his physician's thorougness and will, with proper laboratory tests, give the data for establishing the correct diagnosis. A careful examination of the entire body should, of course, be our standard, but with many women patients and the rush of private and hospital practice, this is not always possible, but some of the forms of physical examination which represent the minimal possible exposure of the genitalia should be discarded from practice. If this is not done, some of the complications of gonorrhea or gonorrhea itself in women especially, may be missed and frequently a concurrent secondary lues or scabies will not be noticed at all. At the present time with many cases of syphilis of long duration reaching us, nothing short of a complete physical examination can be thought of unless we are to miss lesions involving the central nervous system, eyes, heart, aorta, and many other parts of the body. In the hospital clinic as great a degree of privacy as possible should be shown the patient, both while taking the history and during the physical examination. Nothing will do more to encourage our patients than to have them feel that they are screened from the gzae of other patients.

The bacteriological examination of smears in suspected gonorrhea, the dark field examination and the Wassermann test in syphilis are so essential in venereal work that it is unbelievable that any physician, attempting to treat this troublesome group of diseases, shall not have the facilities for these tests available in his office or clinic, or shall not make use of the resources of the state, municipal or private laboratories. And yet it is amazing to note how many cases of gonorrhea are diagnosticated and treated without a bacteriological examination, and how many cases of primary syphilis have missed the most important period of treatment through failure to utilize the dark field examination, but the Wassermann test alone or the outbreak of secondaries have been depended upon in making a diagnosis.

We have always believed that it was important to make clear to the patient exactly what the diagnosis was, the evidence for the diagnosis, and to map out in advance something as regards the plan of treatment. This is not always feasible and has to be modified in individual cases, but as a rule absolute frankness at this point is well worth while. Usually the patient will wish to know how long the course of treatment will be, and very frequently some simple similes can be utilized in making it clear how indefinite the answer has to be. We frequently tell our patients that like a fire, easily extinguished with little or no damage, at its start, syphilis, if detected early, immediate diagnosis established by dark field examination and treatment begun at once, is easily eradicated in most cases, but if either is allowed to smoulder for a long time, they often do great damage and are difficult to stop.

After establishing the diagnosis, treatment should be started as soon as possible. Indeed, a safe rule in both hospital and private practice in the primary and secondary stages of syphilis, is to look upon this as a life-saving measure and as in acute appendicitis, cerebro-spinal meningitis, and diphtheria, to start treatment at the earliest possible moment after the diagnosis has been established. We, therefore, attempt to give the first dose of arsphenamin before the patient leaves the office or clinic. This is very important for the future well-being of the patient and has an important bearing on the community welfare in the way of rapidly reducing the contagiousnss of the infected individual. Before the patient departs, we believe that a frank talk on his or her relations to the public should be given, as well as any general rules for hygiene that may prevent secondary infections of themselves or of others. With waiters and waitresses, market men, counter men and all food handlers in general, street venders of horns, dentists, children's nurses and many others, it is necessary to advise them to give up work while open lesions of syphilis are present, but when they heal as they rapidly do under the intensive form of treatment, they are allowed to return to their work. It does not seem feasible to omit this personal talk in spite of the fact that the Massachusetts Department of Health provides us with a statement to be given to the patient to read at home. We believe the two things should be supplementary to each other, and that the personal advice should not be omitted. Personally we have had little or no difficulty from telling patients that we were to report them to the Department of Health by number. A few of them believe they are to be reported by name, but when they have seen the blank and have learned the reasons calling for the reporting of this group of cases, they usually are willing to coöperate in every way. Even elderly and important men will accept the system without further objection when told that it is a part of the duty of good citizenship to read the circular of information supplied with the reporting blank in order to understand a portion of the campaign that the Commonwealth of Massachusetts is fighting aaginst venereal disease! It has been our rule to tell them of the value of statistical methods in studying the problem and also what the state and nation are trying to accomplish in their work; to warn them of the dangers of these diseases to themselves as well as to others, and also to point out clearly the obligations toward their physician and toward the Department of Health, which are established by their being reported by number. We also make it clear that there is a rule in the system of reporting venereal cases stating that if they do not follow the course of treatment, they will have to be reported by name and address to the local Department of Health with the attendant discomfort of being looked up by officers of that department.

A follow-up system, therefore, becomes absolutely necessary both in the clinic and office; a simple 3 x 5 card with spaces for name and address, months and days, makes a convenient one for the office and entails little or no work in keeping it filed under a month and day index. Simple follow-up letters will do much in getting the majority of patients to keep their appointments and follow their treatment regularly. It is apparently not recognized that such a follow-up system is well worth while to the physician in more ways than one, because it does keep his patients in hand and many of them are grateful for the evidence of interest shown in them. In a clinic of any size a more elaborate system has to be used and must be in the hands of a clerical force, constituting an important element of clinic management. In the larger male genito-urinary clinics there is needed a man, who, above all, is not prejudiced against those afflicted with venereal disease and who has the intuition or the training of a social worker, to look after the multitudinous details of the work, supervising the follow-up, checking up the cases to be reported, looking out for contacts, clearing up misunderstanding in the patient's mind about directions, diagnosis, plan of treatment and time for return, besides being a wise and safe general adviser. In the female genito-urinary and the general syphilis clinics, social workers or trained nurses may be available as clinic executives, the type of training not being so important as the personality of the individual. Frequently the clinic executive can and does exert an influence even greater than any physician of the staff in the upbuilding, activities and effect of the department. Under such management the work of the clinic, the follow-up system with its attendance cards, its follow-up letters of various types, routine and personal, the reporting by name to the local Departments of Health, conferences with various charitable and medical institutions and with probation officers, will go ahead smoothly and effectively, and almost more important than all, many family and other contacts can be gathered in and efficiently and sympathetically handled.

We have found it does much to reassure the venereal patient at the end of his first visit to ask if he has any questions he wishes answered and to assure him that we shall be always ready to answer others in the future. When patients understand what and why things are being done they become interested, and when interested, then it becomes easy to get them to report for treatment.

The venerealogist, both in private and charity practice, will bring about the best end results when he can successfully hold his patient to the somewhat lengthy course of treatment so necessary in order to insure a complete cure in this group of diseases. This will be brought about largely through individual attention, by careful history taking and physical examination, by gentleness in treatment and by protecting the modesty and sensitiveness of the afflicted, but the personal factor with its far-reaching psychological effect, here as in all branches of medicine, will always count nearly as much as clinic management and system.

THE TREATMENT OF SYPHILIS

BY C. MORTON SMITH, M.D.

It is undoubtedly true that the majority of cases of early syphilis first consult the general practitioner or family doctor and this custom will probably continue. It is then a matter of great importance that he be alert and qualified to make a clinical diagnosis early and confirm it by demonstration of the treponema in serum from primary or early secondary lesions; or later by a positive Wassermann reaction.

Before beginning treatment every case must have a careful and complete physical examination including the blood Wassermann. While the Wassermann is not a specific test for syphilis, it may be looked upon as probably the best single symptom or sign of luetic infection that we possess. However the result should always be interpreted in conjunction with the history and physical findings. Repeated strongly positive reactions unexplained by causes other than syphilis should be looked upon as an indication for a reasonable amount of anti-syphilitic treatment, not the most strenuous. Many cases have damaged hearts, kidneys or are otherwise abnormal when syphilis is acquired. In the group of cases of late syphilis, some or all of the defects may be due to the disease itself. Most if not all of these defectives require special care as to dosage and frequency of treatments. This condition is especially necessary since the introduction of the more potent synthetic arsenical preparations which sometimes produce serious irritation or inflammation of the liver, skin and kidneys. Great care must be taken to guard against these distressing and often dangerous complications. These conditions will be discussed more in detail later. The irritating effect of mercury on the tubules of the kidneys is well known and frequent analysis of the urine of patients under active treatment is imperative.

It is highly important that a positive diagnosis of syphilis be made as soon as possible so that the case of primary or early secondary syphilis may receive prompt and energetic treatment at the time most favorable for a radical cure. The care of early syphilis today carries a two-fold responsibility—first to the patient and second that of safe-guarding the associates and the community. The number of patients seen today with accidental extra-genital, non venereal syphilis give eloquent testimony of this need in protecting the family and the public. The lesions of late syphilis threaten the health and happiness of the individual only.

Aside from the question of public health syphilis in the community presents a serious economic problem. Our study at the Massachusetts General Hospital a few years ago showed the cost of the first year's treatment to the average hospital patient to be approximately $100.00 about equally divided between the cost of car fares, hospital fees, drugs and medicines and the loss of time from work. These figures are almost identical with those given by Hazen from his investigation on hospital patients in Washington, D. C. (Reference H. H. H. Text Book on Syphilis—1919—page 27.)

Ours has been called the age of preventive medicine but for years physicians had been trying to prevent constitutional syphilis by excising or destroying the primary lesion or chancre with various kinds of caustics but without success, because syphilis never remains a local disease. The germs have been found in the local lymph glands within 48 hours after inoculating an animal and, in the blood stream within a week proving the uselessness of such procedure. However, there are two methods of prophylaxis that are effective in certain cases and under certain conditions:—*First,* The use of Metchinkoff's 33 1/3% Calomel ointment thoroughly rubbed into the site of infection within an hour after inoculation. None of Metchinkoff's experiments in this group showed an infection. This procedure is useless after five or six hours have elapsed. *Second*—The intravenous use of arsphenamine or Neo-arsphenamine in approximately normal therapeutic doses repeated at weekly intervals for 4 to 6 doses. Experiments on animals have shown that a single injection of these arsenicals given within an hour after inoculation did not prevent infection, but several injections given much later did prevent the development of syphilis in the animal. Arsphenamine and its equivalents have been given successfully as a prophylactic of human syphilis in many cases by many syphilographers; Guenot and Fournier were among the first to publish their results in 1919.

Failing to find evidence of syphilis in a person exposed to infection from a known syphiltic, he should be given the opportunity to receive such prophylactic treatment; consisting of five or six slightly subnormal doses of arsphenamine or neo-arsphenamine intravenously. These injections may or may not be followed by a course of mercury.

The treatment of primary syphilis today is essentially the same as the treatment of early secondary syphilis. Aside from a mercurial dressing, either calomel powder or a mercurial ointment, which hastens the healing and absorption, the primary chancre usually calls for no other local treatment. Absorption of some of the very large chancres is increased by the use of small doses (gr. v to x) of iodide of potash three times a day. The mercurial dressings also help materially in safeguarding the public against infection. The enlarged lymph glands near the site of the primary lesion seldom need attention. They rarely suppurate and the pain if any is usually relieved by the constitutional treatment and the local use of Ung. Hg. with or without the use of heat or cold.

In the early infectious cases it is best to give intravenous arsphenamine or its equivalent in Neo at once. The first injection should be slightly sub-normal for that individual. Mercury should also be given either by intramuscular injection, inunction or by mouth. The second injection of arsphenamine should be given three or four days after the first; the third follows in four or five days and the balance of the course at weekly intervals until a total of ten injections have been given which constitute the first course.

Frequent analyses of the urine should be made and great care taken to avoid aresenical dermatitis. Most of these cases give a history of a varying amount of erythema of the skin with or without itching usually on the wrists and forearms or lower extremities *before* the real dermatitis appears and lasting only a day or so is often overlooked and more arsenic given with unfortunate results.

The first course of intra-muscular mercury should consist of fifteen weekly injections of gray oil or mercurial cream—salicylate of mercury or bichoridol. These preparations given deep into the gluteal muscles and the site of injection afterward gently but thoroughly massaged should cause little pain, lameness or discomfort. A two inch needle is best for these injections. Care not to deposit mercury in the subcutaneous fat largely prevents painful nodes. It is also better to use a heavy olive oil as a vehicle for mercurial injections rather than liquid petroleum. Following the course of mercury the patient is allowed a month's rest and then a blood Wassermann reaction made. If the result is positive another course of six intra-venous and twelve mercury injections are given. If the result is negative the second course of arsphenamine may be shorter.

Of the complications which may appear early and requiring special care or of special significance are:—

(a) *Iritis*—Dilate pupil immediately with 1% Sol Atrophia, one drop morning and night—Pota. Iod—gr v—x tid is of value in addition to Hg. and Arsphenamine.

(b) *Local periostitis* of long bones and nocturnal headache. Same amount of iodide indicated as above.

(c) *Alopecia* scalp, brows, lashes, beard and body hair may be involved. Hair is usually entirely restored under the constitutional treatment but may be assisted by the use of a hair tonic containing mercury. The chief importance to be attached to alopecia is the very high incidence of positive spinal fluids found in these cases by Wile. Over 70% of his cases of alopecia without signs or symptoms of C. N. S. had some degree of abnormality of the fluid. This fact should be kept in mind and cases of alopecia be given usually thorough treatment in the early courses to prevent if possible the later development of neurosyphilis. It is well recognized that only a small percent of the cases that show some evidence of abnormal spinal fluid early in the second stage of the disease develop tabes and paresis later.

(d) *Myocarditis* may be an infrequent early complication but should be borne in mind and recognized promptly and given rest and antisyphilitic remedies. It is now a well accepted fact that the foundations for aortitis as well as tabes and paresis are laid during the early secondary period.

(e) Extensive mucous lesions in mouth and throat found in untreated cases and occasionally in individuals with mercury and arsenic fast strains of spirochactes. These lesions heal more rapidly if Potassium iodid is added to the treatment and a bichlorid of mercury mouth wash used.

In the arsenic fast cases the use of bismuth injections may be of definite value. There are various preparations of bismuth on the market for intramuscular use only given in the same way as mercury deep into the gluteal muscle. The usual dose is one or two decigrams every four to seven days. The injections are painless and usually non toxic. A blue line on gums is the earliest outward sign which clears up on omitting the drug. Bismuth has not been in use long enough to give it a definite rating but it seems to fit in the place where mercury and arsenic do not relieve or cannot be used. Like mercury and arsenic bismuth may cause renal irritation if given too fequently or in too large amounts. It is less rapid in its action as a spirochaeticide than arsphenamine. In some late cases of syphilis the Wassermann reaction is changed to negative under bismuth where mercury and arsenic have failed.

In the treatment of late secondary or tertiary syphilis conditions and objectives vary widely from the early stages of the disease. A careful physical examination must be made to detect the extent of damage from the syphilitic infection. and also the results of the ravages of time and other diseases. It is imperative to determine the exact condition of the excretory organs as well as the circulatory and nervous systems. Impairment of either of these means reduced dosage and increased attention to elimination to avoid therapeutic accidents.

In the treatment of early syphilis a complete cure is our objective while in these later cases we may consider the therapeutic goal reached if by our care and treatment we enable our patient to live out his expectancy of life, as healthfully and happily as possible. If this is accomplished we should feel satisfied although the Wassermann reaction may not have become negative.

In these cases of longstanding infection a balance between the invading germs and the host has usually been struck and care must be taken not to upset this balance by too strenuous treatment. Unless there is some pressing reason for haste it is safer to begin the treatment of late cases with mercury and perhaps iodide of potash for a few weeks and then start with small doses of arsphenamine and increase the dose and give more injections than in an early case.

Always begin with a small dose and increase with care. It has been shown that the same danger of Herxheimer reactions exists in the late as in the early case and the result in late cases may be more serious. Mercury is also of value in these cases and iodide of potash assists much in hastening the absorption of end-arterial inflammations and syphilitic granulomata. As an adjuvant to mercury and arsenic iodine is still of great value.

There is often a tendency to give less arsphenamine in the late cases. This is a mistake, they should receive practically as much treatment as early cases only in smaller doses given over longer periods. All courses of arsphenamine should be followed with mercury by mouth if intra-muscular injections are impractical. The bowels should be cleared with laxatives before arsphenamine is given and with a saline cathartic the morning after. The diet should be light preceding and following injections, and the treatment continued till all signs and symptoms have disappeared and a negative serology obtained if possible. Both late and early cases of syphilis should be given all the benefits of regular living, hygiene, air, sunshine, sleep and tonics. There should be frequent examinations of the urine and a constant watchfulness kept over the excretory system.

Treatment of the pregnant syphilitic woman offers one of the richest fields in prophylactic medicine today. The pre-natal clinic detects the presence of syphilis much earlier in pregnancy than was formerly possible and an active "follow up" worker assures early and continual treatment.

Every complete physical examination should include a routine Wassermann. The percentage of positive tests in pregnant women without signs of the disease varies widely, according to race, and social status—from 1½ to 3% in private practice to 35 to 40% among certain classes of dispensary patients.

Treatment to be most effective should start early and be continued to delivery. It should consist of six or eight slightly subnormal injections of Neo at weekly intervals supplemented by mercury. With proper care and precautions no untoward manifestations have occurred and many apparently healthy babies have been born and remained free from all stigmata of the disease where preceding pregnancies had resulted in miscarriages or still births. If the treatments are delayed till the later months of pregnancy the benefits to the foetus are correspondingly diminished. The Wassermann reaction on blood from the cord and infants during the first six months are often unreliable. The urine of pregnant women under treatment must be carefully watched for signs of kidney irritation.

There are now few real contra-indications to the use of arsphenamine, but many conditions call for extreme care as to dosage and frequency. Arsphenamine should not be given in cases showing extensive jaundice or severe nephritis and advanced heart disease requires careful management. An attack of arsenical dermatitis absolutely contra-indicates further arsenical treatment of any sort for at least three to five years. Erlich considered optic atrophy an absolute contra-indication for arsphenamine. It certainly calls for caution in administration and while we have had cases benefited by these injections one or two patients have grown very definitely worse while receiving treatment.

The coöperation of an opthalmologist should always be sought in these cases before arsenic is given. Patients with deafness of luetic origin have received little or no benefit from arsphenamine and like the optic nerve involvement some of these cases have been made worse.

Arsenical dermatitis fortunately is an infrequent but distressing complication of the intensive use of arsenic. It may follow any of the arsphenamine preparations with equal frequency or security. Dermatitis is seldom produced by the first injection but occurs after the third or later treatments. It may come on without warning and a normal kidney function is no security against such skin irritation. However several patients with dermatitis have given a history of itching and burning of the skin following an injection with the presence of a macular or erythematous eruption usually on hands, wrists, feet and ankles, usually of a few hours duration only, so that little impression is made on the patient and careful questioning is often necessary to bring out this fact. A history of such an eruption after an arsphenamine injection is sufficient reason for omitting further treatments of this kind for some time or at least proceeding with due caution.

The skin condition is due to faulty or delayed elimination but there is no evidence at the beginning of any kidney disease or disturbance of renal function. The condition should be looked upon as serious and everything done to aid elimination, forced fluids saline cathartics and the intravenous use of sodium thiosulphate. If this is not available sulphur in twenty to sixty grain doses once a day may be of benefit. The skin itself calls for the usual treatment for dermatitis. Recovery is always a slow process and no more arsenic should be given for four or five years.

Jaundice may result from too large or too frequent doses of arsphenamine. Individual susceptibility may also play a part as cases sometimes develop after a small amount of treatment. Many of the cases of arsenical dermatitis show a certain amount of jaundice also. Forced fluids and the usual treatment for jaundice should be followed. Lavage through the duodenal tube has been of great benefit in a few of our cases when it was available.

Each case of jaundice must be carefully studied to determine if possible whether the jaundice is of luetic or arsenical origin for it is known that syphilis sometimes produces hepatic disturbance even to acute yellow atrophy, all other etiological factors having been eliminated.

Arsphenamine is a more effective therapeutic agent than any of the newer preparations, but is more likely to produce reactions. Neo-arsphenamine is probably more widely used today than any of the arsenicals, its lack in potency being made up by a greater number of larger doses.

It may now be obtained in ampules in solution ready for use under the name of Neosol each ampule has a date before which the contents must be used. These packages are extremely convenient for the physician who only has an occasional patient needing such treatment.

Sulpharsphenamine can be used intra-muscularly or even subcutaneously. It is comparatively free from untoward reactions but is a weaker preparation than Neo. We use it chiefly intravenously.

Tryparsamide is of no value in the treatment of early syphilis.

Iodide of potash still holds a place among the anti-syphilitic remedies. It is not a spirochararticide but acts chiefly in absorbing the inflammatory products of the disease. It is of special value in the relief of nocturnal headaches early periostitis and as an adjuvant to mercury and arsenic in the late inflammatory changes of tissues, blood vessels and organs.

The time for most effective work against late syphilis and its complications is early in the thorough energetic persistent treatment of primary and early secondary cases carried if possible to a radical cure. Such a procedure is not only most important for the individual patient but is also one of the most effective measures in protecting the public health.

SYPHILIS OF THE AORTA AND HEART

BY WILLIAM D. SMITH, M. D.

It is an interesting fact that an intelligent patient with syphilis is usually much worried about his chances of getting locomotor ataxia. He knows about paresis and fears insanity as a possible result of his syphilis, but he is never the least disturbed over his chances of dying of angina pectoris or aortic disease or aneurism.

As a matter of fact, however, the chances of a cardiac death in syphilis are not only greater than those of death from disease of the central nervous system, but probably greater than from all other forms of visceral syphilis combined. Just how great are the chances of cardiac involvement it is difficult to state for reports from various clinics and pathologists give strikingly different statistics.

Lenz (Elliott)[1] speaking for the urban population of Germany, stated that 25% of all syphilitics die of aortitis or its consequence as against 3 to 4% from paresis, 1 to 2% from tabes and 10% from all other forms of visceral syphilis.

Reid[2] in an analysis of the Massachusetts General Hospital cases found 54 cases of aortic syphilis in 1678 autopsies: an incidence of 3½%.

Lambe[3] from the Presbyterian Hospital in New York reported 47 cases in 1024 autopsies: an incidence of 4½%.

From another angle in R. C. Cabot's[4] series syphilitic aortitis represented 13% of all organic cardiac disease including hypertensive and renal hearts.

Lambe[5] reviewing various statistics and comparing them with the Presbyterian figures draws conclusions, probably conservative, that syphilitic aortitis occurs in 4 to 7% of autopsies in a general hospital, that it accounts for 15 to 25% of all organic heart disease, and that it occurs in from 50 to 75% of all syphilitics.

From an academic point of view the most striking and significant evidence of the frequency of syphilitic involvement of the heart and aorta was the work of Warthin[6] of Ann Arbor. In a two-year period 33% of the total adult cases autopsied showed active syphilis either by characteristic lesions or by the presence of spirochetes. Of the cases so proved by autopsy to be syphilitic, Warthin found active lesions in the aorta in 78% and in the heart in 88%. He drew the general conclusion "that the heart and aorta of every syphilitic are infected."

The striking difference between these figures and those from the Massachusetts and Presbyterian Clinics suggests the possibility that the pathologists may not be talking about the same thing and that the Massachusetts Hospital statistics may well represent the gross clinical incidence of the disease, while Warthin's figures, as the writer understands them, in many cases do not represent the gross clinical incidence of disease, but histological changes frequently requiring long search for their demonstration and showing the incidence of infection and "its persistence in clinically cured and inactive cases."

Without attempting any detailed description of pathology and recognizing that various lesions have been described in the heart itself such as types of degeneration, collections of spirochetes, fibrosis and even gummata involving the heart wall and conduction system, it is important to realize that the significant lesions forming the background for most of the recognized clinical types of syphilitic heart disease (dilatation of the aorta, aneurism, aortic regurgitation and angina) are those beginning in the aorta; that the usual starting point of the process is in the first portion of the ascending aorta above the aortic ring and the mouths of the coronaries; that a chronic indurative, inflammatory process is set up which after a shorter or longer period of latency may spread upward and about the circumference of the aorta, giving rise to diffuse dilatation, or more localized in one segment, result in definite aneurism, or more commonly reaching downward, invade the aortic ring and mouths of the coronaries causing aortic regurgitation or angina; and, whether the end process be aneurism, aortic disease or angina, the primary process is a localized aortitis.

While various statistics are available showing the age and sex incidence, it is sufficient to remember that it is generally a disease of middle life standing between the rheumatic group in younger and the arterio sclerotic group in older persons; that it is far commoner in men than in women; and while the disease may manifest itself within wide time limits after the primary infection, the period between infection and symptom probably averages from fifteen to twenty years.

In the late stages of aortic and cardiac syphilis the signs and symptoms are obviously dependent upon the anatomical lesions present; that is, the signs ordinarily associated with aortic disease, angina, or aneurism, usually a well marked clinical picture recognized and well understood by the average clinician.

The real problem is the early detection of aortitis before it has produced gross and irreparable damage. If we could detect clinically changes in heart and aorta which Warthin could demonstrate after prolonged search, we could prevent many unfortunate end results.

The early signs of aortitis are characterized by obscurity and often by absence. In no condition is an early diagnosis more difficult for a syphilitic involvement of limited extent and localized in the ascending aorta before the production of gross anatomical damage gives no characteristic signs. We may however, get hints, and in the absence of other known cause any obscure chest sign or symptom should be regarded as such a hint. Such complaints as a sense of substernal pressure, of constriction, mild or severe, slight shortness of breath, paroxysmal dyspnoea, chest pains, palpitation or even a sense of weakness and lassitude; the finding of a cardiac irregularity, tachy cardia, poor heart sounds, unexplained murmurs especially in the aortic area, a loud or bell-like aortic second sound in the absence of hypertension, a suspicion of increased supra-cardiac dulness, or too ample pulsation in the supra sternal notch, should suggest the possibility of central vascular syphilis.

While none of these are characteristic, and granted there are no definite diagnostic signs of early involvement, certain general principles if borne in mind will help.

(1) During the early stage of syphilis there is a general dissemination of spirochetes over the body. In this the aorta and heart do not escape and if we accept Warthin's work, the heart and aorta of every syphilitic is infected.

(2) Every late or latent case of syphilis should be regarded as a possible early aortitis and especially every case with a persistently positive Wassermann without other lesions in the nervous system or elsewhere, should be suspected and every effort made to rule out an aortitis; conversely realizing the frequency of syphilis as a causative factor in heart disease (15-25% of all organic heart disease) any obscure, vague or unexplained chest symptom or sign even in a patient without history of syphilis should suggest a Wassermann, fluoroscopic, and X-ray investigation.

(3) A negative blood test does not always rule out aortic syphilis.

(4) The fluoroscope can detect abnormal pulsations and the X-ray changes in the width and shape of the aorta that elude careful physical examination.

In short, an early diagnosis rests not on any characteristic sign or symptom, but on an intelligent clinical suspicion plus all the help the loboratory can give.

For the last few years we have very properly heard much of the necessity of lumbar puncture and examination of the cerebrospinal fluid as a necessary safeguard before discharging the clinically cured syphilitic with a negative blood Wassermann. Important as this procedure may be, there are equally good reasons why the late or latent syphilitic should be examined by fluoroscope and X-ray. It is beyond question that if this simple procedure were made a routine many early cases of aortitis and occasionally a symptomless aneurism would be discovered.

As to therapy, obviously the ideal treatment is prevention. That is, thorough sterilizing treatment during the earliest stage of the infection, recognizing that live spirochetes are probably already colonized about the nutrient blood vessels and the rich lymphatic network of the first portion of the aorta. The clinician who treats the syphilitic at the inception of his disease can be more efficient in the prevention of later cardio-vascular misfortunes than the internist and syphilographer can twenty years later in relieving symptoms and prolonging life.

Early cases before the appearance of actual cardiac symptoms and before marked anatomical damage has been done should receive antisyphilitic treatment as intensive as the general condition of the patient warrants.

Late cases after the onset of cardiac symptoms present a double problem. The patient must receive treatment proper to his condition as a cardiopath and not infrequently the necessity for rest, change of occupation, and digitalis is temporarily of more importance than treatment of his syphilis.

In the handling of these cases, the syphilographer must know internal medicine or the internist know syphilis; failing this the internist and syphilographer must work in coöperation.

As to the method of treatment and the choice of drugs, it is generally believed that arsphenamin is definitely indicated in the treatment of syphilis of the aorta and heart; it is also generally conceded that it is more useful in conjunction with mercury and iodide than alone and for the past two or three years the impression has been gaining ground that arsphenamin is better used to follow preliminary treatment with mercury and iodide than to initiate treatment.

No precise or generally acceptable routine comparable to the technique of the treatment of early syphilis has yet been worked out, and it is difficult to see how it can be for so many factors, such as the age and strength of the patient, the condition of the kidneys, the presence or absence of decompensation must be appraised in addition to the specific lesion or symptom which demands treatment.

It is exceedingly easy to gather a series of cases of cardiovascular syphilis that under treatment with arsphenamin have shown striking results with relief of symptoms, improvement in general condition, and apparent increase in life expectancy.

The most impressive cure of an angina in the writer's experience was in a man of 70, arterio-sclerotic with aortic disease and a prognosis obviously poor, who wthout previous treatment was given a course of arsphenamin with subsequent administration of Hg. and K.I.

Notwithstanding this general impression that salvarsan is the proper drug to use in cases of cardio-vascular syphilis and with due regard to the many instances of strikingly beneficial results, there is another side to the picture.

A man of 38 without known syphilis, found to have a positive Wassermann and an aortitis with aortic regurgitation but without aneurism, angina, or history of decompensation, was given an initial dose of 0.3 arsphenamin. Two days later he fell from his chair dead. Granting the liability of aortic cases to sudden death, the case in question was not one in which sudden death would have been expected and it is hard to avoid the feeling that a different therapeutic approach might have been associated with a different outcome.

Reports in the literature of cases in which arsphenamin has been followed by definite disaster, or by intensification rather than improvement in the clinical picture, have become frequent enough.

Stokes, of the Mayo Clinic, in commenting on some cases illustrating the treatment of cardio-vascular syphilis, says in regard to a case of aortic aneurism with collapse and death forty-eight hours after the first injection of arsenic,[7]

> "Arsphenamin makes a dangerous beginning for treatment of late syphilis. . . . ."

In respect to a case of cardio-vascular syphilis and neurosyphilis with death under treatment he says,[8]

> "Arsphenamin, because it administers a therapeutic shock (Herxheimer reaction), because of the rapidity of the healing changes which it produces and because of its vasculo-toxicity; is dangerous to bad hearts."

Again in a case of early diagnosis of syphilis of the heart with angina he comments,[9]

> "The treatment should be begun with mercurial preparations, but subsequently arsphenamin and mercury should be pushed with vigor. . . . ."
>
> "We have seen much evidence that healing changes actually take place in the cardio-vascular system, which if too rapid, give rise to severe complications. . . . ."

Wile,[10] from his experience in cases of central vascular syphilis, states that in spite of favorable results from the use of arsenic, he has seen many cases in which such treatment has resulted in decompensation and failure in the myocardial and aortic groups and numerous cases of aortitis and coronary disease made worse in consequence of intravenous arsenic and concludes that arsphenamin should not be used as a routine measure in cardiac syphilis but may be used with reasonable safety in those cases which have responded to a previous administration of Hg. and K. I.

In accord with the well known difficulty in prognosis of such cases, he has found it impossible to predict what type of case will react favorably to arsphenamin and what will not.[11]

There is one characteristic of the arsenic preparations generally appreciated in the treatment of early syphilis but given less consideration in the late serious visceral manifestation, and that is its rapid and fulminating effect upon all lesions of syphilis; it is in this respect much more rapid than Hg. and its use is followed by an extraordinary absorption of gummatous tissue and syphilitic infiltrates. Herein lies its advantage in early syphilis and one of its dangers in cases with serious organic changes in vital organs.

The writer is not qualified to discuss in detail the minute pathology of these lesions or the tissue changes under treatment, but broadly speaking the result of treatment is the absorption of syphilitic infiltrates with the formation of scar tissue, or fibrosis; and it is reasonable to surmise that the integrity of such vital organs as heart and aorta might be better protected by slow and gradual rather than rapid and fulminating action.

There is also the somewhat theoretical consideration of liberating too quickly a large amount of endotoxins from killed spirochetes with subsequent toxic effect upon vital tissue.

My own impressions of the treatment of this type of case based on such experience as I have had are somewhat as follows:

1. Arsphenamin is a useful drug and should not be deleted from the treament of cardio-vascular syphilis.
2. *Mercury and Iodide are the Indispensable Drugs* in the treatment of these cases.
3. Treatment of aortic and cardiac syphilis should always be begun with Hg. and K. I. and only after some weeks of such preliminary treatment and a careful consideration of the clinical picture, should arsphenamin be used and the initial dose smaller than that generally given, not more than 0.05 gm. to 0.1 gm. of diarsenal gradually increased to not more than 0.3 gm. or the corresponding amounts of neo. If tolerated, then repeated courses should be given as in the treatment of syphilis generally.
4. Arsenic is a dangerous drug to begin treatment for cardio-vascular syphilis and the danger increases in relation to the size of the dose and to the organic changes present in the aorta and heart.
5. In the management of such cases so many factors are involved such as the age of the patient, conditition of the kidneys, degree of arterio-sclerosis, presence or absence of decompensation, etc., that no definite routine can be laid down or followed and the type and intensity of treatment must be determined by the experience and judgment of the clinician.
6. In cases with marked renal insufficiency, arsphenamin may be a safer drug than mercury.
7. In the treatment of the syphilis, we should not forget that the patient has a damaged heart and that the general management of the case in regard to rest, avoidance of strain, digitalis, etc., may be as important in determ-

ining the duration of life as the treatment of the syphilis itself.

8. Occasionally a case may be seen in such desperate condition and with such clear-cut indication for treatment that one is justified in instituting the most intensive treatment including arsenic from the start in the hope of correcting a pathology which if it persists, means the speedy death of the patient.

9. In general, the writer has become sceptical of striking benefit from arsphenamin when the patient shows no symptomatic improvement from mercury and iodide, but, none the less, such a case should be given the benefit of arsenic therapy, and occasionally, in spite of the failure of the older drugs, improvement occurs.

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SOME DOGMATIC STATEMENTS CONCERNING TREATMENT OF NEUROSYPHILIS

BY H. C. SOLOMON, M.D., BOSTON, MASS.

EXAMINATION *of the cerebrospinal fluid in every case of syphilis is the first step in dealing with the problem of neurosyphilis.* In many cases of neurosyphilis the diagnosis can be made only by the aid of fluid examination. In the cases in which the spinal fluid shows changes, the effect of treatment can be best estimated by following the reaction of the fluid from time to time.

The central nervous system is usually invaded by spirochetes in the period of generalization. The involvement of the central nervous system, which takes place during the period of generalization, is very frequently asymptomatic, but is often indicated by spinal fluid pathology. Although it may be many years before active symptoms make their appearance, the spinal fluid will usually remain positive from the early period in these cases in which later damage is likely to occur.

The spinal fluid findings give some indication of the way in which the case will respond to treatment. The cases in which the spinal fluid gives a strong reaction, sometimes called the paretic formula, as a rule, are more difficult to handle than the cases which give milder reactions. While this is by no means the universal rule, it is quite significant and offers an aid in making a prognosis as to the amount of treatment that is likely to be required.

There is no close relationship between the blood Wassermann reaction and the cerebrospinal fluid findings. The blood Wasserman may be positive and the cerebrospinal fluid negative. This is so in the majority of cases of syphilis. On the other hand, the cerebrospinal fluid may be positive when the blood Wassermann is negative. This is true of cases which are receiving treatment as well as those in which the blood Wassermann becomes negative spontaneously. Thus, one finds many cases of syphilis which have been systematically treated to the extent that the blood Wassermann has become negative, and yet an examination of the spinal fluid shows that it is strongly positive in spite of the treatment. Likewise, in late cases of neurosyphilis the blood Wassermann may be negative while the spinal fluid gives the very strongest possible reactions. The spinal fluid may become negative under treatment and the patient have a good clinical remission without any change in the Wassermann reaction of the blood serum. The blood Wassermann, therefore, cannot be depended upon in dealing with the question of treatment of neurosyphilis.

Cases of neurosyphilis react very differently to treatment. Just as the symptoms of neurosyphilis may be extremely varied, so the reaction of cases under treatment differ one from the other. Even cases which may be grouped together clinically give a different response to treatment, so that cases which clinically fall in different groups may give a much more similar response to treatment than cases which are more closely related symptomatically and pathologically.

In a general way it may be stated that meningeal syphilis reacts most favorably to treatment; tabetic neurosyphilis a little less favorably; and the paretic type is the most difficult to handle satisfactorily. It is difficult to evaluate the results of treatment in vascular neurosyphilis. Meningeal syphilis, either of the acute fulminating or chronic progressive types, often improves very markedly and rapidly with the use of arsphenamine given intravenously. A certain number of cases of tabetic neurosyphilis, although by no means the majority, will show improvement with intravenous arsphenamine if this is given frequently enough and over a sufficient period of time. In paretic neurosyphilis the intravenous use of arsphenamine succeeds in producing favorable results in only a small percentage of the cases, and then only when given in large quantities over a long period of time. There are of course, exceptions to these statements. Some cases of paretic neurosyphilis improve very promptly under intravenous arsphenamine, and cases of what appear to be simple meningeal neurosyphilis fail to improve, but, on the contrary, become worse under this treatment. Vascular neurosyphilis, as a rule, gives symptoms only when the lesions in the blood vessel have become serious enough to lead to thrombosis or hemorrhage. While many patients with this type of neurosyphilis seem to do very well under mild anti-luetic treatment, many others do equally well when no treatment is given, so that we are in no position to thoroughly evaluate the results of treatment in this type of case.

For the treatment of neurosyphilis the following drugs and methods are valuable: Intravenous and intramuscular administration of arsphenamine and its derivatives; intraspinal, intracisternal, and intraventricular injections of serum; tryparsamide; and febrile producing diseases, as malaria and relapsing fever. The iodides, mercury and bismuth are adjuvants to any of these methods. As previously suggested, arsphenamine may react very satisfactorily in almost any form of neurosyphilis. In order to get the best results with this drug in the treatment of neurosyphilis, it is often necessary to use it in frequently repeated doses, that is, twice or three times a week over a period of a good many months. Until this has been done, it has not been demonstrated that the drug will not give a satisfactory result. However, experience has taught us that many times it is ineffectual. In a fair number of caess where arsphenamine does not give a satisfactory therapeutic result, intraspinal, intracisternal, or intraventricular injections may produce something more satisfactory. It is, therefore, possible to set down the following suggestions that may be used in cases of neurosyphilis where one is not greatly pressed for immediate results on account of the patient's condition.

Treatment by the injection of arsphenamine is given frequently for a matter of several months as a test for the patient's response to this treatment. His response to treatment can be checked by the clinical course and the spinal fluid findings. With the exception of cases of very mild meningeal neurosyphilis, it is not to be expected that spinal fluid changes will begin to occur for at least three months and in many cases it takes six months to a year or more before this really becomes sufficiently marked to be considered definite. If neither the clinical nor serological improvement is sufficient to prove that the treatment has been thoroughly successful, one may then proceed to the use of intraspinal or intracisternal treatments which, again, must be given a number of times before one has any reason to expect results.

In the cases where satisfactory results are not obtained by the use of intravenous arsphenamine or intraspinal and intracisternal injections, one may be more successful by resorting to injections of serum directly into the cerebral ventricles. In cases of paretic neurosyphilis where experience has taught us that the milder treatments are only infrequently successful, one should resort to a combination of these methods; namely, intravenous arsphenamine, intraspinal, intracisternal, and intraventricular injections, if one is to rely on arsphenamine and arsphenaminized serum. It is possible to give the injections, both intravenous and intracisternal or intraventricular at intervals as frequently as twice a week. In most cases of paretic neurosyphilis this radical type of treatment is required.

Tryparsamide seems to have more effect in many cases of paretic neurosyphilis than does arsphenamine, and it appears that it is often possible to get better results by the use of this drug than can be obtained by the combination of arsphenamine and the serum injections. Tryparsamide is still relatively new, and it is not possible therefore to speak with too much certainty as to what it will do. However, the general consensus of opinion, as gleaned from the literature, as well as personal experience, indicates that this drug is especially valuable in the treatment of cases of paretic neurosyphilis, where it is so difficult to obtain results with arsphenamine. It is also valuable in the treatment of other types of neurosyphilis. Certainly, serological and clinical improvement have been obtained in a large number of patients. It is not possible at the present time to insist upon the final value.

In order to get the best results with tryparsamide, it is necessary to continue the injections for a long period. While clinical results are often obtained within a few weeks, it is sometimes necessary to use the drug over a period of two or more years to get the most satisfactory serological results.

Tryparsamide apparently is most effective when used in combination with arsphenamine and mercury. It is also possible to use it in conjunction with serum injections given into the subarachnoid space or into the ventricles.

The best results in the treatment of neurosyphilis are to be obtained only if treatment is given frequently and persisted in long enough and if one tries several methods or combinations. If one method does not produce the required results, another method should be substituted or combined. It is always necessary, however, to keep in mind the patient's nutrition, his general hygiene, and his reaction to the treatment. Treatment should never be pushed to the point where it is reducing the patient's vitality and therefore the possibility of producing a good bodily resistance.

The result of treatment should be checked by frequent examinations of the spinal fluid. Without such a method of check, one has not a satisfactory method of determining the value of treatment. Clinical improvement may be only temporary and is very often misleading. It has been found that as a general rule, though not without exception, that those cases in which there is no improvement in the spinal fluid are likely to relapse, whereas, those cases in which spinal fluid improvement runs along coincidentally with clinical improvement are likely to be more permanent.

The non-specific treatment of neurosyphilis has been advocated for a number of years, the theory being that the febrile reaction would have some effect upon the invading organism or else raise the immunity of the host by some means. Since 1917 the treatment of neurosyphilis by malaria has been used. This was apparently first introduced by Wagner von Jauregg of Vienna. Several theories have been put forth to explain why it should have some beneficial effect, all being similar to those used to explain the value of non-specific protein therapy. The statement is offered that paretic and tabetic neurosyphilis cases are rare in malaria infested countries where syphilis is extremely frequent. In practice, malaria treatment has been used now quite widely throughout Europe and to some extent in the United States. It consists in inoculating the patient with blood from another individual who has benign tertian malaria. The patient is permitted to have eight to twelve or more paroxysms and then treated with quinin. This is the full treatment. However, many investigators have added arsphenamine or tryparsamide subsequently.

This treatment has been used chiefly in cases of paretic neurosyphilis, although it has likewise been used to some extent in other forms, as the tabetic and optic atrophy cases. A perusal of the literature shows that most of the investigators who have applied this form of therapy are quite optimistic, some claiming remissions in 70% of the cases of the paretic form of neurosyphilis.

Relapsing fever has also been used for treatment of cases of neurosyphilis on the same theory as malaria. It has the advantage of having less severe effects on the patient and a lesser mortality rate.

That something is accomplished by these methods seems certain. It is premature to draw definite conclusions. In our own limited experience we have seen some rather suggestive and interesting results of this type of treatment. It introduces a new method of treatment of disease, and is being applied abroad in the treatment of early syphilis as well as in the late neurosyphilitic forms.

SYPHILIS AND PREGNANCY—PRENATAL CARE

BY DR. R. L. DE NORMANDIE

SYPHILIS occurring in the pregnant woman fortunately gives us no trouble for our answer as to treatment. All physicians are agreed that early intensive treatment must be instituted if the fetus is to survive and not show a syphilitic taint. The difficulty comes in making a diagnosis. Once the diagnosis is established, treatment must follow along the methods laid down by the leading syphilographers. This treatment I shall not enter upon, but confine myself entirely to the clinical aspects of the question and the diagnosis.

The good that prenatal care has done for the pregnant woman is so manifest that there can be no argument at the present time in regard to its usefulness. The greatest stress at first was put on the prevention of eclampsia and the recognition of contracted pelves. The patient's history is not, however, studied sufficiently. It is apt to be hurried over and the purely obstetrical history more carefully investigated. Yet it is from the history carefully taken that our first inkling of a latent syphilis is oftentimes obtained.

In a first pregnancy the early history is not suggestive unless it should appear that the patient had recently acquired syphilis; then the well-known signs and symptoms are present. In later pregnancies the history of the child's fate is most important, and this is where we often fail to do our full duty. Each pregnancy must be thoroughly investigated, and the length of gestation must be recorded. The history of premature labors, then an apparently healthy child, followed by other miscarriages, must always be carefully studied with the possible diagnosis of syphilis in mind.

Syphilis, in my experience, does not cause early abortions. Late miscarriages and premature labors in succeeding pregnancies oftentimes is the rule in untreated syphilis. Even without treatment pregnancies tend to advance further towards full term than the preceding one, only to end in a syphilitic child. The point to be remembered is that premature labors with a macerated fetus must be recorded and the cause if possible must be determined. Unless the patient's complete history of all her pregnancies is carefully obtained, many cases of syphilis will be overlooked.

The development of the Wassermann reaction is of untold value in the discovery of unsuspected syphilis. At the present time all well regulated obstetrical clinics take routine Wassermanns at the patient's first visit, and if syphilis is found positive treatment is begun. A careful physical examination must also be made, for it is a well-known fact that in the latter months of pregnancy the Wassermann has shown some strange variations. Physicians unquestionably do not take a Wassermann as a routine on their private patients; that it is an added safeguard none can question. Personally I have not done it as a routine, and I know of only a few physicians who do it routinely. Occasionally a patient requests that it be done, usually not because she thinks she is infected but because of something she has read. I have never yet regretted not taking the blood routinely, for it is my experience that with the better class of patients the husbands without fail tell frankly their past history when their wives are pregnant. In the dispensary class of patients no such hope and trust can be placed, and these cases must all have a routine Wassermann. Although I have never regretted not taking a Wassermann as a routine, I am firmly convinced that it should be done, even in the better class of patients, and I am confident that in all cases we should advocate it. Because of the fact that leading syphilographers have advised me to do it, I shall begin at once to make it a routine practice.

The technique of the laboratory doing the Wassermann must be above criticism. Mistakes must not creep in, for an error in telling a patient she is infected with syphilis when she is not causes untold suffering.

How the patient becomes infected does not interest us; the point to be remembered is that syphilis turns up in most unexpected places and if the offspring is to have a fair start in life the diagnosis of syphilis must be made early and intensive treatment forced. The later in pregnancy the diagnosis is made, the less the chance that the fetus that is in the uterus will be born without syphilitic lesions. If the diagnosis is doubtful, but suggestive, especially in multigravidae where there is a history of stillbirths, it is much better to give the fetus the benefit of the doubt and begin anti-syphilitic treatment.

Premature labors, stillbirths, macerated babies and malformed babies do not necessarily spell syphilis, but it is necessary for the attending physician to determine if syphilis is present and this can only be done by a searching history, a careful physical examination and a Wassermann reaction. As important as it is to discover syphilis, equally important is it that we shall not tell patients that they are syphilitic on insufficient evidence. Three cases have come to my notice within the year where patients have wrongly been accused of syphilis. Repeated Wassermanns, careful physical examinations, and healthy babies without treatment have proved the error of the diagnosis.

Efficient treatment of the syphilitic pregnant woman early, greatly increases the chances of a normal child. Brilliant results from treatment occur, but unless all physicians keep the possibility of syphilis in any case in their minds constantly, how can these results be obtained? The careful history, the painstaking physical examination, the Wassermann reaction, all part of good prenatal care, must be insisted upon.

Prenatal care has made definite and steady advance in the reduction of eclampsia among the careful physicians of the country; it can do the same against congenital syphilis if the physicians will only be on the alert. But here again the physician must have the coöperation of the patient. She must present herself for medical supervision as soon as pregnancy begins. When this becomes the rule, not the exception, when careful histories are taken and good physical examinations are made, then will we begin to make some headway in the treatment of this protean disease.

OBSERVATIONS ON CONGENITAL SYPHILIS*

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OBSTETRIC and pregnancy clinics rate the incidence of foetal mortality, due to Syphilis, at from 15% to 25%. Children's clinics in cities give us most definite evidence that of babies suffering from Congenital Syphilis, untreated or treated with mercury alone, 50% are dead at the end of the first year; 45% are below par physically and mentally; and only 5% give promise of reasonable development. On the other hand, these same clinics show us that Syphilitic babies recognized as such in the first few weeks of life; treated early and adequately, show hardly any greater mortality and morbidity than the average run of Out-Patient babies. It is reasonably apparent, therefore, that early recognition and early institution of adequate treatment are of utmost value in this rather important disease.

In view of the fact that syphilitic women on becoming pregnant tend to lose their characteristic lesions; tend also to become Wassermann negative with treatment at other times most inadequate; and tend to remain negative for several weeks after parturition, clinical and serological diagnosis of the baby's condition from the mother during pregnancy and for some time after, is unreliable. The tendency of a non-syphilitic pregnant woman to have a so-called false positive Wassermann adds to the uncertainty of serological diagnosis.

While the tissues of dead premature infants with Syphilis will usually have a positive Wassermann reaction, the living syphilitic baby is rarely positive as to blood, cord blood and spinal fluid until 5 or 6 weeks old. The baby's father is occasionally righteously Wassermann negative, and occasionally so through treatment.

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In view of the utter unreliability of a negative Wassermann, therefore, in child or either parent, and in view of the tremendous advantage of early treatment, it is obvious that familiarity with the clinical manifestations of this disease is of the utmost importance. Furthermore, any circumstance in history or appearance which may develop a suspicion of Syphilis is worth keeping in mind.

Occasionally a direct story of Lues in one or both parents may be obtained. Usually, however, that admission comes as a confession after the diagnosis has been made otherwise. Often neither parent knows anything about it. A history of multiple foetal misfortunes of diminishing intensity is of great significance, particularly in the case of young couples, that is to say, a series of miscarriages at increasing maturity, ending with a premature or apparently premature living child which is the patient. In the main, however, clinical manifestations must be our guide to suspicion and from suspicion to diagnosis.

It would be futile in any work short of a large book to give a detailed description of all the lesions which may occur in Congenital Syphilis. For this discussion I shall merely enumerate the more common ones, and a few of the most characteristic ones which have rather emphasized themselves to me during the last twenty years at the Children's Hospital. The fact that the baby's infection is from a lesion in the placenta, and therefore borne by the blood stream, should be ever kept in mind and satisfactorily explains the multiplicity of lesions of every type in every tissue. In fact, the arbitrary division of lesions "early" and "late" is wholly chronological (with very rare exceptions) and it seems as if any type of lesion may occur in any tissue system at any time, and that all types may be present in all tissues at the same time. It is rather more convenient, however, to consider the lesions of the first few weeks as inflammatory, and of later childhood as destructive or reparative. The most frequently seen lesions in the first few weeks of life, or in the so-called florid stage, are in the order of their frequency and importance somewhat as follows:—

1. SKIN AND MUCOUS MEMBRANES

Almost any lesion of the skin which is in color copper, salmon or ham should arouse a distinct suspicion of Syphilis. Small pustules, surrounded by a narrow red rim, on fingers, palms, toes and soles are almost pathognomic. The so-called "doughnut" lesion, slightly raised with a clear center, whose width is about the same as that of the limb of the doughnut, occurring on flexor surfaces, is absolutely diagnostic, as is the "fuzzy" exudate at the inner third of the eyebrows resembling in texture, but lighter in color than seborrhaic eczema.

2. MUCOUS MEMBRANES AND MUCO-CUTANEOUS JUNCTIONS

"Snuffles," or what is called a cold lasting several weeks; fine radiating lines about the mouth and genitals; the moist, wart-like condylomata at the nostrils, corners of the mouth, folds of the vulva and anus and, among the unwashed, in the deep folds of the skin, are diagnostic. Mucous patches, as described in acquired Syphilis, are seldom seen but are represented by small, oval, milky placques, usually symmetrical, resembling leukoplakia, at the junction of the hard and soft palate.

3. VISCERA

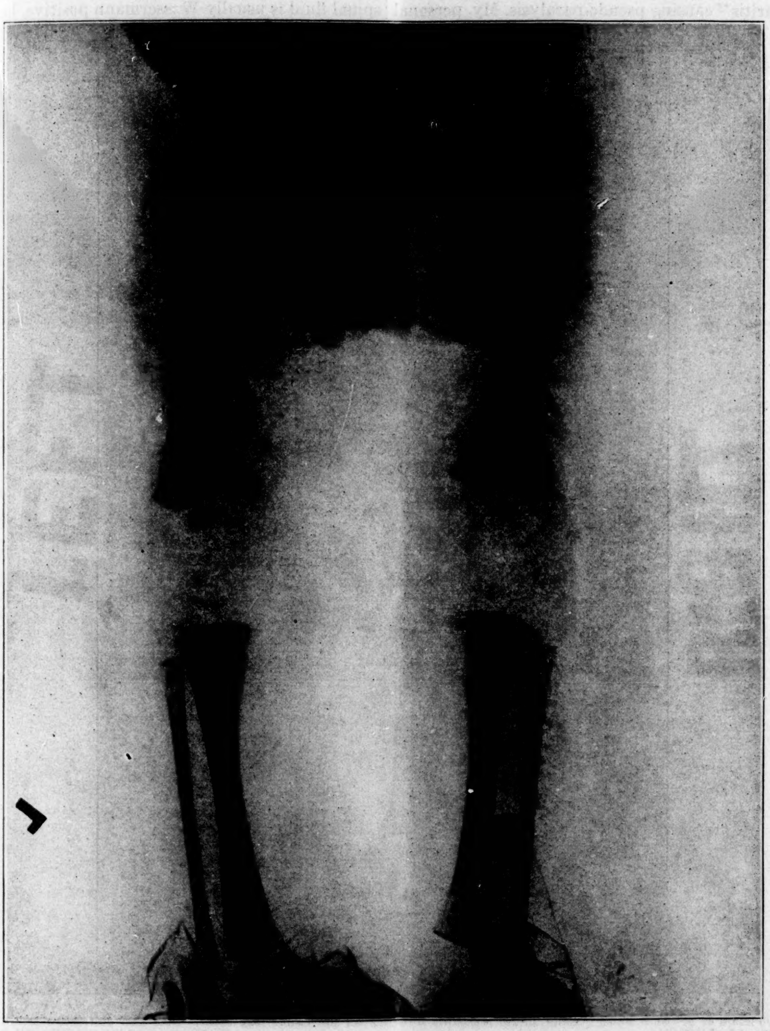
Lesions of all viscera are constant at autopsy. Clincally, lesions of the liver and spleen are recognized by enlargement in more than 90% of all our cases. In this connection it must be remembered that the size of the liver in a small baby is in direct relation to the state of nutrition. In a normal baby the lower edge should be felt 2 cm. below the costal border; in a "skinny" baby without Syphilis, it should be higher; in an overfat baby it might well be lower. There is no known disease in this part of the country in which the liver is consistently enlarged (relative to the baby's nutrition) except Congenital Syphilis. There is also no other known disease in this part of the country in which the spleen of any young baby is palpable. Therefore, an enlarged liver or a palpable spleen in a young baby should inevitably bring up a strong suspicion of Congenital Syphilis. Most babies with Congenital Syphils in the florid stage show at some time a mild nephritis. Most young babies with almost any other infection also show a mild nephritis. This nephritis is not diagnostic but is of value, as I shall show later, in determination of the type and intensity of treatment. Syphilitic babies have colds; syphilitic babies have pneumonia with appalling frequency. The autopsy table alone shows the syphilitic nature of the lesions of the lungs. Lesions of the heart due to Syphilis are also diagnosed on the autopsy table only. (As a matter of fact, incidence of cardiac murmurs or evidence of cardiac disease is lower in our Syphilitic Clinic than in the general run of our total Clinics.)

4. SKELETON

Lesions of the skeleton are practically universal, even in very early life. We have seen them as the first, and temporarily, the only lesion in babies only 2 weeks old. External manifestations of bone lesions such as swelling, tenderness, limitation of motion or paralysis, occur in less than 5% of cases where the lesion is demonstrated to be present by Roentgen Ray. It is our experience that the first recognizable lesion takes place at the metaphysis rather than at the epiphysis, of the shaft, and consists of a punched-out crescent which starts at the surface and extends toward the center, eventually producing the dislocation of the epiphysis, so voluminously described in the literature. Favorite locations for these lesions are in the lower end of the radius and the upper end of the tibia.

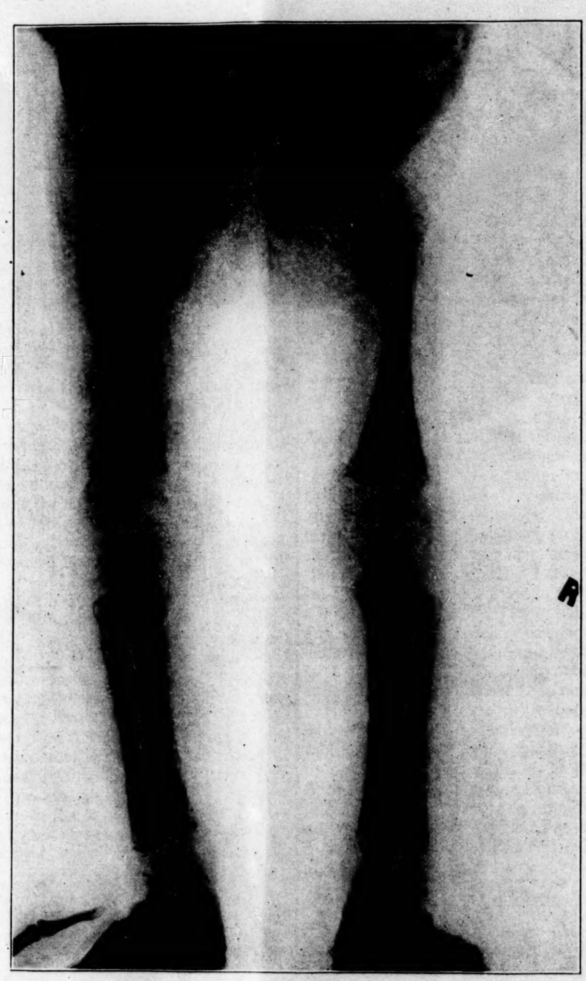
There is also a thickening of the periosteum along the shaft of the long bones which appears definitely later; is without clinical manifestations; and which we feel is a part of the mechanism of repair.

Another lesion occasionally seen is the circular loss of substance in the flat bones, most notably those of the skull, in which 2 to 6 or 8 small areas of osteo-porosis, 1 to 1½ cm. in diameter, may appear within a period of 2 or 3 weeks. These



Picture of W. At 5 weeks. Notice the punched-out crescents at the upper ends of the tibiae, and the absence of periosteal thickening.

are easily palpable but do not show in X-Ray plates.



Picture of P. At 8 weeks. Notice diffuse periostitis involving all the visible long bones. Note also destructive lesion at upper end of left tibia.

5. PERIPHERAL NERVOUS SYSTEM

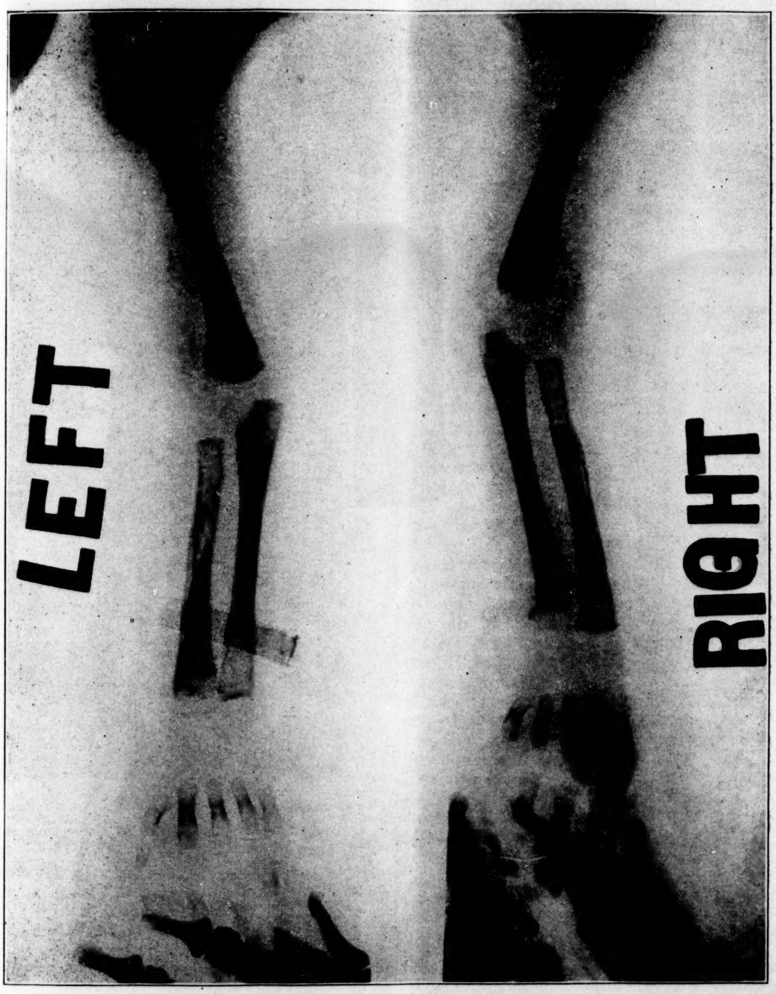
Much has been written about "peripheral neuritis" causing pseudo-paralysis. My personal experience is that no case of pseudo-paralysis exists without a periosteal or bony lesion underlying.

6. CENTRAL NERVOUS SYSTEM

Meningitis has been seen in our clinic in a baby only 2 weeks old. It is indistinguishable in onset, symptoms, nervous manifestations, amount, character and cytology of spinal fluid, from tubercular or any other low-grade meningitis, except by the absence of organisms. The spinal fluid is usually Wassermann positive, however. Syphilitic hydrocephalus seldom appears before the 5th or 6th month and is, of course, the result of a previous meningitis.

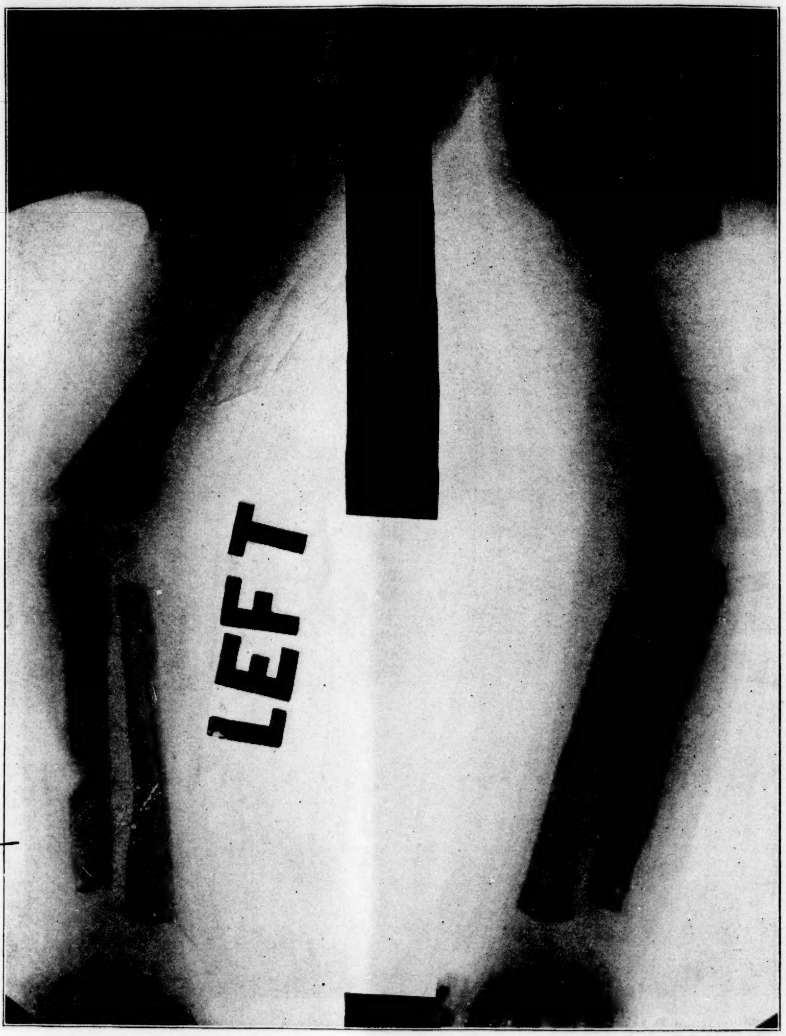
7. ORGANS OF SPECIAL SENSE

Lesions of the organs of the special senses are usually classified as "late." It is universally accepted that the syphilitic baby is more susceptible to colds, and therefore to Otitis Media and its resulting train of evils, than is a non-syphilitic baby. My personal belief is that the frequent Otitis Media of syphilitic babies is not syphilitic in origin but is due to usual pyogenic organisms, which have gained a foothold owing to diminshed resistance. The fact remains, however, that syphilitic babies have bigger tonsils that are fatter and "juicier" than those possessed by non-syphilitic babies. Iritis, choroiditis and keratitis are classified as "late" lesions. The eye men tell me that they usually occur together at the "keratitis age" which is 9 to 11 years. We have seen iritis at 2 weeks; a keratitis at 5 months; and a previously existing choroiditis diagnosed at one year. It is our impression that these lesions arise individually in baby-hood, rather than



Picture of O. At 5 weeks. Note destructive lesions at metaphyses, resulting in dislocation of lower epiphysis of right ulna. Note also extensive periosteal thickening.

combined, as is usual at the "keratitis age." The neural deafness occurring overnight is unknown in our Clinic. It is always of gradual onset, directly contrary to the experience of our ear men, of whom I have sought light and wisdom in this most distressing condition.



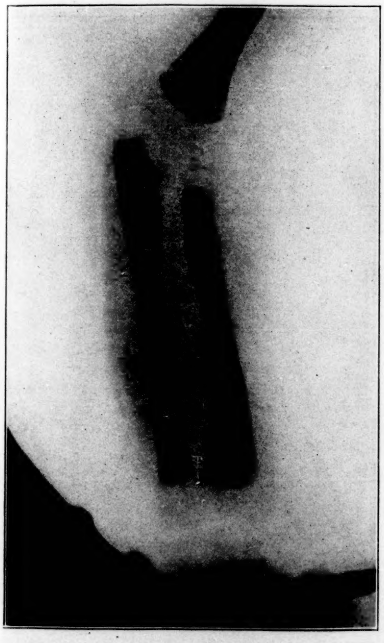
Picture of Mc. At 4 months. Note tremendous thickening of periosteum of all the long bones. (This child died a few days after admission.)

8. LYMPHATIC SYSTEM

General glandular enlargement is emphasized in every competent observation on Congenital Syphilis. Lymph nodes are palpable in every case of local or general infection, eczema, impetigo, miliariasis, "skinny" babies, and even pediculosis. My personal belief is that no diagnostic importance, whatever, as related to Syphilis, should be attached to it.

9. GENERAL OR SYMPTOMATIC

Most syphilitic babies are under weight. Most syphilitic babies look old and "skinny." A baby who persistently refuses to gain, without apparent dietary cause after adequate study, should bring up a suspicion of Syphilis. I find that when a mother with tired eyes says, "Doctor, can't you give me something to make my baby sleep at night? He cries all night and sleeps all day." I am inclined to think of Syphilis. A very much under-weight baby with waxy skin and a grayish lead-colored pallor may also well bring up a suspicion of Syphilis.



Picture of R. At 2 months. This case came to me as a supposed infantile paralysis, with much pain and apparent complete paralysis of the arm. Note the syphilitic periostitis at the upper end of the radius.

"LATE" LESIONS (SO-CALLED)

Bearing in mind that any type of lesion may occur in any tissue at any time, chronologically, the so-called "late" lesions show a slightly different preference for tissues than do the early ones. Lesions of the skin are notable for their rarity. The "cold-sore" which lasts for weeks or months is very characteristic and occasionally other lesions of the skin, identical with "early" lesions, may be observed. At periods of activation, lesions of the viscera identified by enlargement of the spleen and liver, or unusual conditions of the lungs, may exist, but are found far less commonly than in early life.

SKELETON

The most commonly seen lesions occur in the bony system, and are characterized by destructive lesions of the bones to which the word Gummata may be aptly applied, these later resulting in discharging sinuses usually diagnosed and treated as surgical tuberculosis. Other destructive lesions resulting in anatomical deformities are found in the flat bones in large areas of loss of substance, more usually occurring in the occipital region of the skull, called osteoporosis; the well-known "saddle-nose"; and deformities of the jaw.

Hypertrophic lesions of the bones appear to be the resuslt of the response of inflamed periosteum. They are seen in the flat bones, as the well-known frontal and parietal bosses of the skull; and in the so-called saber-shin; and in the case of repeated periods of activation, the so-called onion type of lesion consisting of concentric layers of hypertrophic hard bone.

Lesions of the joints are uncommon. A type of lesion emphasized by our own Post is, however, pathognomic. The low-grade, bilateral knee, moderately swollen, slightly painful, suggesting thickening rather than fluid, essentially negative to X-Ray, is diagnostic.

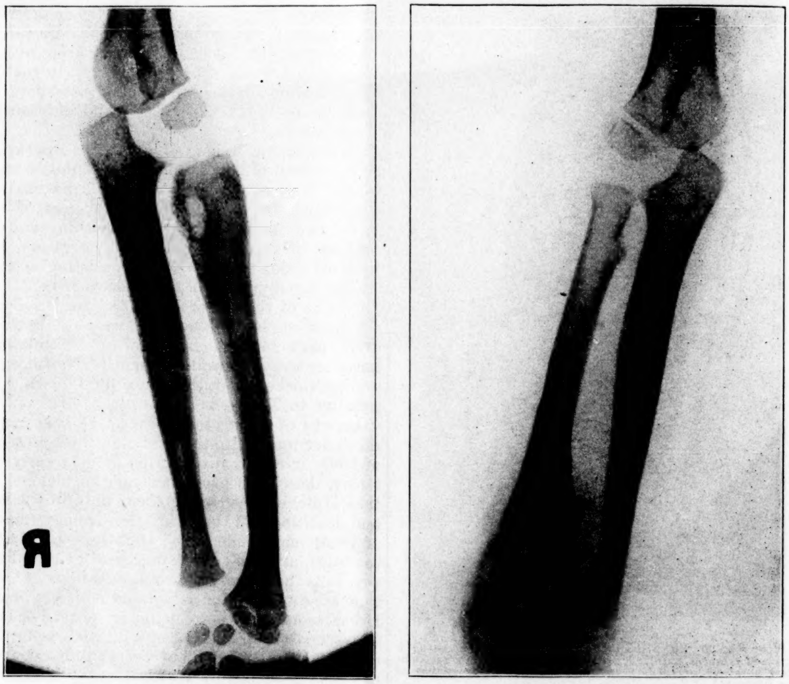
Lesions of the teeth appear to be very much misunderstood. In the first dentition, absence of teeth, irregular distribution or very early extensive decay may arouse a strong suspicion. The true Hutchinsonian teeth occur only in the second dentition and their variation from normal is of great magnitude. The slightly notched, the saw-edge, and the teeth with a row of round depressions half way between cutting-edge and gum are due to malnutrition and not to Syphilis. Hutchinsonian teeth are definitely pegged or conical, sometimes truncated or with wide, square or crescentic notches, and of the cauliflower type of molar described by Walls.

CENTRAL NERVOUS SYSTEM

Lesions of the central nervous system occur in later childhood exactly as they do in babyhood. Syphilitic meningitis is not uncommon in untreated cases and is in no-wise different clinically from tubercular meningitis, except that tubercle bacilli are never found in the spinal fluid; the spinal fluid Wassermann is always positive; and the child tends to get well. Hydrocephalus developing in later childhood is occasionally seen and is, of course, the result of a previous meningitis. Mental deterioration or retarded development is almost universal in untreated cases. The tabetic syndrome of adults, in its entirety, is unknown in our clinic.

ORGANS OF SPECIAL SENSE

Lesions of the eye occur very commonly in untreated Syphilis, and, as I have previously stated, may develop as early as 2 weeks. To the general practitioner, the usual symptoms presented are those of interstitial keratitis, in which the acute stage is marked by considerable inflammatory reaction resulting in the well-known opacities of the quiescent stage. Lesions of the ear are quite common. Syphilitic perforations of the drum may be present for months and tend to remain dry in spite of inter-current colds. Neural deafness is usually a part of that period of activation which results in keratitis. In our experience, it has never appeared suddenly in the guise of true "over-night" deafness of adults with acquired Syphilis.



Picture of M. At 3½ years. Notice the gummata, as well as the deformed architecture. This child had discharging sinuses at elbow and wrist and had previously been treated for 6 months as a case of surgical tuberculosis.

LYMPHATIC SYSTEM

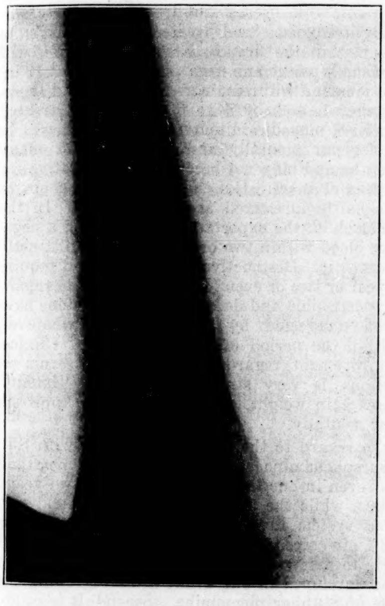
In children, adenopathy is so frequent in any pathological skin condition; in every general infection, and the glands so readily palpable, that I feel that little diagnostic importance should be attached to it. On the other hand, the epitrochlears, if alone enlarged, should arouse suspicion.

LATENT SYPHILIS

The Wassermann reaction is primarily responsible for revealing to us as cases of Syphilis many children who present no signs of the disease. According to a strict interpretation of the definition, no such condition exists because the Wassermann reaction is itself a symptom. On the other hand, a mal-nourished child who is queer in its reactions to its fellows; a little under par mentally, with unusual susceptibility to infections, will often prove to be positive in blood or spinal fluid or both.

PROGNOSIS

Too great emphasis cannot be put upon the importance of treating a syphilitic child early. It must be remembered that the syphilitic baby, recognized as such in the first few weeks of life and treated adequately, has almost as good a chance as the non-syphilitic baby. I will remind you again that of untreated or insufficiently treated babies one year old, 50% have died; 45% aren't any good; and only 5% give promise of reasonable physical and mental development. If untreated until 4 or 6 months old, changes have taken place which are irreparable and often immediately fatal. On the other hand, the baby who has been seen very late, that is at a year or a year and a half, has a very good outlook. Of course, this baby has had a milder infection or is possessed of greater resistance. He is, of course, one of the few that did not die and, while it will take a long, long time to get him serum negative, he will do very well otherwise with a fair amount of treatment. The child taken very late, with destructive or hypertrophic bone lesions or with lesions of the organs of special sense, will be years in acquiring a negative Wassermann; years in repairing destructive bone lesions; and will probably never be able to repair wholly the damage to sight or hearing or both.



Picture of S. At 7 years. Notice the concentric layers of hard bone, laid down as the result of successive periods of periosteal activity. Note also the beginning gumma.

TREATMENT

Just what function mercury performs I do not know. It is considered to have some effect in raising the individual's resistance to the infection but none on the organism itself. I think it helps, but I cannot emphasize too strongly the fact that alone it helps only and does not cure; and that its action is so slow and incomplete that the more severe cases die and the less severe ones are rid of their manfest lesions very slowly. I do not believe that the particular form of mercury used makes much difference except for the comfort of the child and the convenience of the mother. My preference is for the inunction or the constantly applied mercury binder. The 25% strength of mercury ointment has never in my experience caused the so-called mercury dermatitis except when old and rancid.

Iodide of Potash probably has a place in the treatment of Syphilis in general. In Congenital Syphilis, I know of no condition or lesion that is not better taken care of by the arsenicals. I think that the nerve men still use it in their field.

ARSENICALS

Arsphenamine, which is considered to be the most effective remedy in adults, is very unsuitable for children. In our Clinic, with insufficient help, the complexities of the technique of preparation and administration make its use impossible. Furthermore, the very volume of fluid required for an adequate dose is a danger to the circulatory system. In addition, severe reactions and many fatalities have followed its use in babies.

Neoarsphenamine, intravenously, in doses of 10 to 20 milligrams per kilo, is probably the most effective remedy for Congenital Syphilis, in any stage, in human experience. It has, however, many drawbacks. First, intravenous technique in babies is often difficult or impossible. I have been doing it for 20 years and heartily sympathize with the man who cannot get into or find a vein. Furthermore, the administration of Neoarsphenamine intravenously is attended with many distressing general reactions and quite a few fatalities. Neoarsphenamine, injected intramuscularly, is very much less immediately effective than when given intravenously and its injection is accompanied by very severe pain lasting for hours and sometimes days, and frequent abscess formation.

Sulpharsphenamine. We have been using this for two years, in doses of 20 to 40 milligrams per kilo. It is very soluble, and in concentrations of 1/10th of a gram to 1 c.c. of water, produces only momentary severe pain when used intramuscularly. Its absorption must be very rapid because the skin and visceral lesions of early cases disappear about as rapidly as when neoarsphenamine is used intravenously; and induration or tenderness at the site of injection seldom persists for more than a week. Sulpharsphenamine, intravenously, appears to be no more effective clinically or serologically than when given intramuscularly. The difficulties of intravenous technique and the several severe general reactions reported seem to me to outweigh the momentary pain of intramuscular injection.

OUTLINE OF TREATMENT

Our general program is somewhat as follows:—We give Sulpharsphenamine intramuscularly to very young or very small babies, in a dose of g.05, g.075, or even g.1, according to size and weight of the baby, for 3 doses, then increase by g.05 in each succeeding series of 3 doses until the baby has received a total of 12 doses at weekly interval. At the end of this first series, the baby is given a vacation of one month, when it returns for Waassermann. If negative, as it usually is, the baby is given a second series of 12 injections, each of about one half the corresponding dose of the previous series, when another month's vacation is given and a Wassermann taken. If this is negative (as it has never failed to be in this group), the baby returns for blood test alone at the increasing interval of 3 months, 6 months and 1 year. In this group of young babies, all those who have once become negative have remained so to date. A small baby, critically ill with Syphilis or a syphilitic baby, critically ill with anything else, or in a state of severe malnutrition, is treated by mercury alone in inunctions or by a constantly applied binder, until its general condition has been improved to a reasonable degree. Then it is given Sulpharsphenamine in very small doses (g.05 to g.075) at weekly or fortnightly intervals, meanwhile continuing the mercury. When in really good condition, the full course of 12 injections is given as above. In older children, the dose is started at g.2 and is rapidly run up to g.4 for a total of 12 weekly injections and the series repeated with a vacation of one month at the end of each series until the Wassermann becomes negative. So far we have had no general reactions, whatever, and no local reactions worth mentioning. To one who has seen the severe general reactions following the intravenous use of Neoarsphenamine, and who has been through the shrieking bedlam of a clinic where it was being given intramuscularly, the peace, quiet and friendly atmosphere of the Sulpharsphenamine clinic are very pleasing. It is my hope and belief that the ease of preparation; simplicity and painlessness of administration; and absolute freedom from severe reaction, will make the comfortable and effective treatment of Congenital Syphilis possible and convenient in the hands of every general practitioner.

CONTRA-INDICATIONS TO THE ADMINISTRATION OF ARSENIC

In the presence of certain well-known conditions, intravenous arsenic in any form may produce severe crippling and often fatal reactions, and must not be given if these conditions are present:—

1. In grave malnutrition from any cause, even Syphilis.
2. In any severe infection, particularly of the lungs, as Pneumonia or severe Bronchitis.
3. In high fever from any cause.
4. In the presence of acute meningeal symptoms.
5. In Nephritis.

While Neoarsphenamine may be safely given intramuscularly in small doses, under any of the above circumstances, it is probable that the rapid absorption of Sulpharsphenamine makes its intramuscular administration just as dangerous as when given intravenously.

RESULTS OF TREATMENT

I must emphasize again the importance of recognizing the disease and treating it early. A baby recognized and treated early, that is to say within the first 6 or 8 weeks of life, will become Wassermann negative at the end of 12 injections and will remain so for a year and three-quarters. A baby 4 to 6 months old, treated likewise, may die in spite of treatment; will be under par mentally and physically for many months and may not become serum negative for a year or more. His chances of coming out of the battle unscarred are pretty poor. In the older child, the expectation of obtaining a negative blood within two or three years is distinctly optimistic. Destructive bone lesions will require a year or two or even longer for complete repair. Hypertrophic and deformative bone lesions have been unaffected by any treatment whatever, within the period of my observation. Clinical improvement, regardless of X-Rays or serum reactions, is very striking. Even the "latent" cases gain weight, color, activity and approach par mentally.

In regard to the results of therapy with Sulpharsphenamine alone, four observations stand out even in our limited experience of two years. First, while the usual incidence of central nervous system involvement in untreated cases is 18%; in cases treated with other arsenicals about 5%, to date not a single case of Neuro-Syphilis has developed in our Clinic after beginning the use of Sulpharsphenamine. Second, it is established that no case of interstitial keratitis improves much with or without treatment after the acute stage has passed. We have 2 cases in which the opacities have disappeared to such a degree that they can be seen only in a strong light when viewed from an oblique position, one after 6 months and one after 9 months treatment. In a third case, the moderate opacities in one eye have completely disappeared and the total opacity in the other has diminished so that the child can count fingers (in a strong light) at 3 feet, after one year of irregular treatment. Third, neural deafness of syphilitic origin is supposed to be hopeless unless treatment is inaugurated within a few days of the appearance of the deafness. One case of almost total deafness can now hear ordinary conversation at 2 feet behind her back. Fourth, while a doubtful Wassermann, during or after a series of treatments, has been accepted to mean that the disease is still active and should therefore be considered as a "positive," a number of our patients have returned 3 to 6 months after a "doubtful," without further treatment, and became negative.

ULTIMATE PROGNOSIS

I have not lived long enough since the advent of arsenical therapy to form any sound opinion as to the "cure" of these cases. I have seen some cases go as long as 7 years after the last treatment without a return of a positive serum. They appear to be as healthy as non-syphilitic children. These were treated by Neoarsphenamine intravenously in very early babyhood. On the other hand, I have discharged to other clinics on account of passing our age limit late cases who had been under treatment with us for as much as 7 years and who still presented destructive lesions and had a positive blood. My conviction is that the baby who is seen early and treated adequately and early, will become normal in every way and remain so for so long that it may be considered cured. Since using Sulpharsphenamine I have become more optimistic about the older "late" cases, and am convinced that we are doing them much more good than with other therapeutic agents. Their sera have now become negative in more than 50% of cases, after 36 doses (3 series of treatments).

No discussion of Congenital Syphilis can be complete without considering the field of prevention. Public immorality is and probably will be about what it has been for some time to come unless influenced by fear, intelligence and more effective legal measures. Fear may be aroused even in the high school child through talks on physiology. Greater intelligence in regard to venereal disease may be made an objective of frank discussion between father and son and mother and daughter. The Syphilis of illegitimates cannot be influenced greatly by these means, but in the powers of the law we could have a tremendous weapon if we might require that both contracting parties present a certificate of a negative Wassermann as a condition to obtain a marriage license.

INTERSTITIAL KERATITIS*

BY MAUD CARVILL, M.D., AND GEORGE S. DERBY, M.D., BOSTON

THE main purpose of this study is to determine as far as possible how much may be accomplished by thorough antisyphilitic treatment of patients afflicted with instertitial keratitis. Although many classic studies of this disease have been published, not enough data are yet available to answer authoritatively such important questions as the following:

What is the effect of thorough antisyphilitic treatment on interstitial keratitis?[1]

Does it prevent the involvement of the second eye, or, if involved, is the attack milder?

Is the final vision of thoroughly treated patients better than that of patients who received desultory treatment or none at all?

Are other involvements of hereditary syphilis avoided or ameliorated?

Can interstitial keratitis be avoided by the thorough treatment of hereditary syphilis in earlier years?

We hope that this study throws some light on these and other questions.

MATERIAL

For a number of years past, the clinical material in the eye clinic of our hospital has ranged from 16,000 to more than 20,000 new cases a year.

Previous to 1910, the general treatment of interstitial keratitis at the Massachusette Eye and Ear Infirmary was carried out in a more or less desultory fashion. Owing to the chronicity of the disease and the failure on the part of the patient and his relatives to observe prompt beneficial results from the treatment, the patient was apt to become dissatisfied and to wander from one hospital clinic to another. Moreover, the antisyphilitic treatment was prescribed by the ophthalmologist, and no efficient means were taken to see whether or not it was carefully and consistently carried out. And when the ocular disease had quieted down, the patient was lost to sight.

In 1910, the infirmary established a new policy in handling this group of cases. After the ocular treatment had been prescribed, the patients were put under the skilful care of Drs. Abner Post and C. Morton Smith, who conducted a special syphilis clinic, first at the Boston Dispensary and later at the Massachusetts General Hospital.

A social service department had already been founded at the Massachusetts Eye and Ear Infirmary, and it was possible to put a special worker in charge of this group of cases, whose duty it was to visit the homes to see that the patients received their treatment as prescribed, to have them report at the clinics at the specified time, to study the home conditions, and to bring other members of the family to the clinic for observation and treatment when necessary.

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*From the clinic of the Massachusetts Eye and Ear Infirmary.

After the eye condition has subsided, the patient is discharged from active treatment at the infirmary, but still remains under the care of the syphilis clinic just as long as is necessary to carry out a thorough course of treatment, always a period of years.

This combination of service has proved most satisfactory, and the attention given is much appreciated by the patients, as is shown by their willing and enthusiastic coöperation.

Since 1910, approximately 1,000 cases have been handled in this manner at our hospital.

We have collected a series of 100 cases of interstitial keratitis (previous to 1910) in which patients either received anti-syphilitc treatment in a desultory fashion and over comparatively short periods of time, or received no general treatment worthy of mention. In none of them had arsphenamin or its allied preparations or injections of mercury been used. These are designated as the "untreated" group[2].

For comparison with this group, we have selected from the remaining 222 cases of our material, 100 cases with the longest duration of time from the subsidence of the acute symptoms to the final examination whose treatment might be considered intensive, as it consisted of numerous injections of arsphenamin or allied preparations, mercurials by injection, inunction and by mouth, in addition to iodids when indicated. Except for the shorter period of observation of these "treated" cases, a fair comparison can be made.

A general study has been made of the whole group, comprising 322 cases.

We examined a very large proportion of all the patients in this series personally, and a few have been seen by other members of the infirmary staff. Also our social service department and the executive authorities of the hospital gave much help. The house and outpatient records of the infirmary and the outpatient records of the syphilis clinic of the Massachusetts General Hospital have been freely consulted.

In the "Treated" group, the longest time between the subsidence of the active symptoms of the first attack and the final examination was ten years; the shortest seven months, and the average two years and nine months. In eight cases it was less than a year. In the "untreated" group, the longest time between the subsidence of active symptoms and the final examination was fifty years; the shortest eight months (this case was a recovery from a second recurrence), and the average time nine years and nine months.

INCIDENCE

The incidence of interstitial keratitis among the patients of the Massachusetts Eye and Ear Infirmary is forty-five in 10,000 or 0.45 per cent, as compared with Spicer's figure of 0.60 per cent, and Stephenson's "not more than 1 per cent." This estimate is based on the patients seen in the years from 1914 to 1923 inclusive.

TABLE I

INCIDENCE OF INTERSTITIAL KERATITIS AS SEEN IN EYE PATIENTS AT THE MASSACHUSETTS EYE AND EAR INFIRMARY

Years, Oct. to Oct.	Total number of cases	Total number of new I. K. cases	Per cent.
1914-15	18,689	89	0.5
1915-16	19,833	92	0.5
1916-17	19,331	86	0.4
1917-18	16,371	76	0.5
1918-19	16,321	72	0.4
1919-20	15,404	77	0.5
1920-21	15,270	80	0.5
1921-22	15,172	69	0.45
1922-23	16,139	51	0.3
1923-24	15,959	66	0.45
Total for 10 years	168,489	756	0.45

INCIDENCE ACCORDING TO AGE OF ONSET

The curve of age of onset is characteristic. A rapid rise from 2 years to its high peak between 6 and 9 years, than a moderate subsidence until it rises to another peak at 15 years, then flattens out abruptly.

In our 322 cases, the greatest incidence was between 5 and 10 years of age.

TABLE II

AGE OF ONSET OF INTERSTITIAL KERATITIS

Age of onset, Years	Number of cases	Per cent.
1- 5	25	7.7
5-10	111	34.4
10-15	81	25
15-20	54	16.7
20-25	26	8
25-30	19	5.9
30 and over	6	1.8

Igersheimer[4] in 256 cases, found the greatest number between 10 and 15 years; Cunningham[5] in 336, between 10 and 15 years; Hoor[6] in 109, between 10 and 20 years; Greeff[7] in 279, between 10 and 20 years; Spicer[3] in 556, between 5 and 10 years, and Stephenson in ninety-seven, between 5 and 10 years.

The youngest patient we have recorded was a girl aged 2 years, the oldest a woman aged 46. Spicer reports in his 556 cases four patients under 2 years, and 5 between 2 and 3 years. Hutchinson[8] reported one case in a child 1 year old.

INCIDENCE OF SEX

In our 322 cases, there are 197 females, or 61 per cent, and 125 males or 38.8 per cent. In Spicer's 556 cases, there were 368, or 61 per cent females, and 228 or 38 per cent males. In Cunningham's 581 cases, there were 342, or 54 per cent females, and 239, or 46 per cent males. In Hoor's 625 cases there were 314 or 51 per cent females, and 311 or 49 per cent males. In Igersheimer's 257 cases there were 130, or 50.6 per cent females, and 127, or 49.4 per cent males.

Spicer makes the statement that the greater prevalence of interstitial keratitis in females may be due in part to pregnancy and lactation and consequent weakening of resistance. The following figures may have some bearing on this question: In the 200 cases under special study, the males and females were equal in number between the ages of 18 and 41, twenty-one of each sex. Of the twenty-one females, only nine were married at the time of onset, and of these two had not been pregnant. Our figures do not bear out Spicer's contention.

In one case, the patient was six months pregnant at the onset of interstitial keratitis. This was a mild attack of three months' duration leaving very faint nebulae of cornea with a few deep vessels; no involvement of the choroid; vision of right eye, 20/20; of left eye 20/20, and the other eye has had no acute symptoms and shows no involvement of cornea or choroid three years since the primary eye cleared up.

Igersheimer accounts for the peak between 11 and 15 years in females in his cases as due to the beginning of menstruation. There is a peak in the curve of the age of onset between 11 and 15 years in our cases, but it is seen in the males as well as females, the attack occurring in thirty males and thirty-four females at this time. Thus, we would say that the onset of puberty may be of some influence.

VISION

We present tables of the visual results in the 200 cases, and again separately in the treated and untreated cases. In all cases the vision was taken with correction of ametropia. These tables do not really represent the exact vision in each case, as the two eyes must be reckoned together, for many children possessing one good eye can get on in school practically as well as do those with two.

TABLE III

FINAL VISION IN THREE HUNDRED AND FIFTY-SEVEN EYES

	Number	Per cent.
Full vision=20/15, 20/20, 20/30, 7+97+51=	155	43.4
Good vision=20/40, 20/50, 20/60, 42+37+3=	82	23
Practical vision = 20/70, 20/100, 20/200, 34+26+20=	80	22.4
Fingers	29	8
Light Perception	6	1.6
Nil	5	1.3

TABLE IV

MATERIAL OF TABLE III DIVIDED INTO "TREATED" AND "UNTREATED" CASES

	Number	Per cent.
Treated Eyes		
Full vision=20/15, 20/20, 20/30, 6+64+34	104	58
Good vision=20/40, 20/50, 20/60, 19+11+1	31	17
Practical vision = 20/70, 20/100, 20/200, 15+13+8	36	20
Fingers	6	3.3
Light perception	1	0.6
Nil	0	0
	178	
Untreated Eyes		
Full vision=20/15, 20/20, 20/30, 1+33+17	51	28
Good vision=20/40, 20/50, 20/60, 23+26+2	51	28
Practical vision = 20/70, 20/100, 20/200, 19+13+12	44	24
Fingers	23	12.8
Light perception	5	2.7
Nil	5	2.7
	179	

In later life their disability consists in being barred from certain occupations, and in having a lesser factor of safety, when we take the normal chances of injury to the one good eye into account.

The figures in Table IV tell their own story. Vision was 20/30 or better in 58 per cent of the treated cases, and in only 28 per cent of the untreated. Vision was 20/60 or better in 75 per cent of the treated cases, as against 56 per cent of the untreated.

Vision of 20/70 or worse was found in 24 per cent of the treated and in 42 per cent of the untreated. In the treated cases, only fifteen out of 178 eyes had a vision of less than 20/100. One eye had only perception of light. In the untreated, 45 eyes out of 179 had a vision of less than 20/100. Five eyes had light perception only, and in five vision was nil.

In Table V, the vision of the better eye in 193 cases is given. Taking the figures from the standpoint of education, table V shows that 110 children would have the same chance as the normal child. 43 more could study in the same classes with normal children, but would be handicapped, especially in choosing an occupation. Thirty-two could be educated in defective eyesight classes, if any were available, or failing that, would have to be referred to institutions for the blind, as would the remaining eight.

TABLE V

VISION IN BETTER EYE IN ONE HUNDRED AND NINETY-THREE CASES

	Cases	Per cent.
Full vision=20/15, 20/20, 20/30, 8+70+32	110	56
Good vision=20/40, 20/50, 20/60, 22+19+2	43	22
Practical vision = 20/70, 20/100, 20/200, 20+5+7	32	16
Fingers	6	3
Light Perception	0	
Nil	2	1

It should be noted, however, that as some of the patients grow older and more intelligent, it may be possible to improve their vision somewhat more with glasses. On the other hand, it may be diminished by recurrence of the disease, or by the development of myopia, especially prone to occur in these cases.

TABLE VI

VISION IN THE BETTER EYE IN TREATED AND UNTREATED CASES

	Number	Per cent.
Treated Cases		
Full vision=20/15, 20/20, 20/30, 7+47+20	74	74
Good vision=20/40, 20/50, 20/60, 8+4	12	12
Practical vision = 20/70, 20/100, 20/200, 11+2+1	14	14
Fingers	0	0
Light Perception	0	0
Nil	0	0
	100	
Untreated Cases		
Full vision=20/15, 20/20, 20/30, 1+23+12	36	38
Good vision=20/40, 20/50, 20/60, 14+15+2	31	33
Practical vision = 20/70, 20/100, 20/200, 9+3+6	18	19
Fingers	6	6.4
Light Perception	0	0
Nil	2	2.1
	93	

Table VI testifies to the advantages of treatment, as did Table IV. In 74 per cent of the treated cases, the vision of the better eye was 20/30 or better, while in the untreated cases only 38 per cent attained a similar amount of vision. In the treated cases only 1 per cent was below 20/100. In the untreated cases, 14 or 15 per cent show 20/100 vision or less.

TABLE VII

FINAL VISION

Authors	Number of eyes	Per cent. 20/20 to 25/100	Per cent. 25/100 to 20/200	Per cent. less than 20/200
Igersheimer	152	59.2	22	18.4
Derby	161	65	34	0
Uhthoff	200	43	36.5	19.5
Langendorff	165	69.6	15.5	14.9
Our cases	357	75	12.5	11.2
Our treated cases	178	84.2	11.8	3.9

Igersheimer noted myopia forty-four times in 152 eyes, or 29 per cent; Derby, nineteen times in eighty cases, or about 25 per cent. In our material of 378 eyes, we noted myopia in 114, or 29 per cent.

CONDITION OF EYES AT LAST EXAMINATION

Cornea. Corneal opacities, varying from diffuse dense leukomas, in a few cases, to a hardly discernible faint haze, or the presence of a few delicate vessels seen only by high magnification, were present in 252 eyes, or 70 per cent. In forty eyes, or 11 per cent, the corneas were apparently normal. Most of these were not examined with the slit lamp.

Choroid and Retina. Of 356 eyes, we have notes on the fundus examination in 199 eyes; and of these, 136 eyes, or 68 per cent, show disseminated, rounded lesions of the choroid and retina. In two eyes there were pigmented spots in the macula; one eye showed a macular hole with pigmented border and a persistent hyaloid artery.

Cataract. Seven eyes, or 1.9 per cent, developed cataract, one traumatic, three complicated, and three unclassified, occurring in young people.

Optic Atrophy. Nine eyes or 2.5 per cent had optic atrophy. Three of these occurred in treated cases, and six in untreated cases.

SEVERITY OF DISEASE AS INFLUENCED BY AGE OF PATIENT

Igersheimer states that there is a certain difference in the course and outcome according to the age at which the disease develops. In the very young there is a better prognosis than at puberty or later. He states that interstitial keratitis in the first ten years of life seldom is of longer duration than three months. Our figures do not confirm this. In our 200 cases, the most severe, by which we mean the cases with long duration, severe symptoms, and poor end-results, are grouped as follows: Between 1 and 5 years, thirteen cases; between 5 and 10 years, forty-nine cases; between 10 and 15 years, twenty-nine cases; between 15 and 20 years thirty-two cases; between 20 and 25 years, ten cases, and between 25 and 45 years, seven cases.

COURSE OF THE DISEASE IN THE TWO EYES

There is a general impression that the second eye runs a milder course than the first. Hirschberg has taken this stand. Elschnig[10] found it to be so in his cases, but considered it due to energetic antisyphilitic treatment during the attack in the primary eye. Spicer writes: "Generally the attack in the two eyes is alike, but one eye may be attacked severely, the other slightly; the duration and intensity may be different." Igersheimer writes that "the inflammation" of the cornea of the second eye can reach exactly the same grade as the first and almost always does. It has been observed that the duration in the second eye is often shorter than in the first." Igersheimer found no case in his material in which the inflammation in the second eye lasted longer than that in the first; in many cases, on the other hand, the duration in the second eye was shorter. This is the only way the second eye seems favored.

Among our 200 cases, we have the data of the duration of the attack in the first and second eyes in sixty cases. Of these there are fifteen cases, or 25 per cent, in which the attack in the second eye was of longer duration than in the first.[11]

In forty-three cases the attack in the primary eye was longer than in the secondary, and in two cases the duration was practically the same. Our figures, therefore, show in a large majority of cases a longer duration in the primary eye.

IS THE RELATIVE SEVERITY OF THE ATTACKS IN THE TWO EYES INFLUENCED BY TREATMENT

Of the 100 treated cases, in ninety-three, or 93 per cent, the arsphenamin injections were begun early in the involvement of the primary eye with interstitial keratitis. Among these ninety-three cases, there were eighteen cases, or 19 per cent which, with intervals of from one year and three months to more than seven years from the subsidence of all active symptoms in the primary eye, showed no signs of interstitial keratitis in the other; three cases, or 3.2 per cent in which the second eye had no acute inflammatory symptoms but showed slight involvement of choroid; in two cases or 2.1 per cent in which the attacks in the second eye were so mild that they were recognized only by the presence in the cornea of a few vessels; thirty-four cases, or 36 per cent in which the second eye showed a less severe attack than the primary; eight cases or 8.6 per cent in which the second eye showed a more severe attack; twenty-eight cases, or 30 per cent in which the attacks in the two eyes occurred simultaneously or overlapped and the duration of the attack in each eye could not be obtained.

In seven cases, or 7 per cent of the 100 treated cases, arsphenamin injections were not given until the second eye became involved. In this group the second eye showed a less severe attack in two cases; an attack of equal severity in one case, and a more severe attack in four cases.

Our figures, therefore, would seem to show that intensive treatment when interstitial keratitis develops in one eye may have some influence in preventing the involvement of the second eye, or in producing a milder type of disease if the second eye becomes involved.

DURATION OF ATTACKS OF INTERSTITIAL KERATITIS IN SECOND EYE OF ONE HUNDRED TREATED CASES

There has been no involvement of the second eye in eighteen cases, or 18 per cent. In three cases the second eye had had no inflammatory symptoms, but showed choroidal changes. In thirty-four cases, or 34 per cent, the duration and severity was less than in the primary eye. In two of these eyes, the attack in the second eye was so mild that it was recognized only by the presence of a few vessels in the periphery of the cornea. In four cases, or 4 per cent, the attack in the second eye was equal to that in the primary, and in eight cases, or 8 per cent the attack in the second eye was more severe than in the primary eye.

These figures would seem to suggest that intensive antisyphilitic treatment exerts some influence in the prevention of the involvement of the second eye, and perhaps makes the attack less severe in some cases. We hope to analyze this material again so that a final comparison may be made with the untreated cases.

INTERVAL BETWEEN ATTACKS IN PRIMARY AND SECONDARY EYE

In 162 cases, or 80 per cent of our 200 cases, the eyes were attacked within a few weeks. The two eyes were involved simultaneously in fifty-five cases, or 27.5 per cent. Of these, twenty-eight cases were seen within one week of the development of symptoms; twenty-one within two weeks, and fifteen within three weeks.

Is there any relation between the age of the patient at the time the interstitial keratitis develops and the length of the interval between the attack in the first and secondary eye? We have definite data on this point in sixty-eight cases, and the age of onset has apparently had no effect.

There seems to be no relationship between the length of interval and the severity of the attack. In the case in which there was an interval of seventeen years, the attack in the second eye was very severe. With one exception, all the cases in which there was an interval of more than three years were severe.

In fifteen cases, the secondary eye became involved within three weeks of the attack in the primary eye. Of these, ten occurred in the first decade, and five in the second decade.

TABLE VIII

Effect of Age on Interval Between Involvement of First and Second Eye

Number	Interval		Decade of life
	Years	Months	
1	1	3	third
1	1	6	second
1	1	9	second
3	2		first
1	3		first
2	3		second
1	3		third
1	3	2	second
1	3	2	third
1	3	6	second
1	3	6	third
1	4		first
1	5		second
1	17		second

In nineteen cases, the second eye became involved in the fourth week after the onset of the primary eye. This is the period in which the largest number became involved. Of these, eight occurred in the first decade, seven in the second decade, and four in the third decade.

In seventeen cases the second eye was not attacked for more than one year after the involvement of the primary eye.

RECURRENCES

TABLE IX

Recurrences in Untreated Cases

Cases	Interval in years from first occurrence	Number of eyes
1	19	both
1	17	one
1	10	both
1	10	one
1	9	one
1	8	one
1	7	both
1	6	one
2	5	one
2	4	one

Igersheimer, in 257 cases, had thirty-four recurrences, or 14 per cent. Spicer gives his incidence of relapses and recurrences as 9 per cent.

We consider as recurrences only those attacks of inflammation occurring at an interval of one year or more after the subsidence of the acute symptoms of the primary attack of interstitial keratitis. The severity of these recurrences varies from a slight ciliary injection lasting less than two weeks to attacks that are more severe and of longer duration than the original attack.

TABLE X

Multiple Recurrences

Cases	Interval from primary attack: Yrs.	First recurrence	Second recurrence	Third recurrence
1	1	right	left (4 yrs. later)	....
1	1	left	right (2 yrs. later)	....
1	2	no data as to eye involved	no data as to eye involved (3 yrs. later)	....
1	3	both	both (2 yrs. later)	....
1	3	both	left (1 yr. later)	....
1	10	both	right (2 yrs. later)	....
1	3	both	right (3 yrs. later)	....
1	3	both	both (13 yrs. later)	both (4 yrs. later)
1	3	both	both (2 yrs. later)	right (1 yr. later)
1	4	left	both (2 yrs. later)	both (2 yrs. later)

In the 100 treated cases, in 178 eyes there were six recurrences or 3.6 per cent. In one case the recurrence was of mild degree; in two cases **moderate, and in three cases severe. Two of the last group were of longer duration than the first attack. In the 100 untreated cases, in 179 eyes there were seventy-one recurrences involving forty-nine eyes of thirty-four patients, or 27 per cent.**

In the six recurrences in the treated cases, a single eye of six patients was involved, and all occurred within three years of the subsidence of the symptoms of the primary attack.

Of the seventy-one recurrences in the untreated cases, twenty-four were first attacks of inflammation after the subsidence of symptoms of the primary attack, and occurred within three years after the eyes had recovered from the primary attack. Forty-seven recurrences occurred more than three years after the primary attack, and of these, twenty-four were first recurrences.

The longest interval between subsidence of symptoms of primary attack and later involvement was twenty years. In this case it was the third recurrence in both eyes of the patient.

Thorough antisyphilitic treatment seems to have a striking effect in the prevention of recurrences. The 100 treated cases showed 3.6 per cent of recurrences. The 100 untreated cases, on the other hand, showed recurrences in 27 per cent.

It is true that an error may exist here, for the treated cases average only about three years in duration. They may develop subsequent recurrences. If, however, we compare the recurrences in treated cases with those of the untreated cases of the same duration, e.g. three years, we find recurrences in twenty-four eyes, 13 per cent, as compared with 3.6 per cent among the treated cases, a sufficiently striking difference.

TABLE XI

Other Signs of Inherited Syphilis in One Hundred and Forty-five Cases

76 per cent.	teeth typical or suggestive
13 per cent.	square heads
11.7 per cent.	fissures of mouth
2.7 per cent.	saddle-nose
35.1 per cent.	periostitis of tibia
0.6 per cent.	osteomyelitis of ulna
12.3 per cent.	synovitis of knee
19.2 per cent.	deafness
8.9 per cent.	glands
0.6 per cent.	endocarditis
3.4 per cent.	feeble-minded
4.1 per cent.	deficient mentality

OTHER SIGNS OF INHERITED SYPHILIS IN ONE HUNDRED TREATED CASES

The 100 treated cases were analyzed to determine the relative frequently of other evidences of hereditary syphilis in addition to the interstitial keratitis.

In ninety-eight cases, or 98 per cent, the Wassermann reaction was positive, and in two cases, or 2 per cent, negative. Of the two cases with negative Wassermann reactions, one patient had a positive history of syphilis in the family, and other signs of hereditary syphilis in addition to the interstitial keratitis; the second had other signs of hereditary syphilis.

Of the ninety-eight cases with a positive Wassermann reaction, fifty-five cases, or 55 per cent had a positive history of syphilis in the family; seventy-eight cases or 78 per cent, had other signs of hereditary syphilis in addition to the interstitial keratitis. There were forty-six of these cases, or 46 per cent, with both a positive family history and other signs in addition to the interstitial keratitis. In four cases, or 4 per cent, the Wassermann reaction was the only sign other than the interstitial keratitis.

In the final serologic examination, the Wassermann test was positive in twenty-five cases, or 25 per cent, and negative in twenty-four cases, or 24 per cent. (Data were lacking or not taken in fifty-one cases.)

LATER SYPHILITIC INVOLVEMENT

In 100 untreated cases, later syphilitic involvements included: Deafness in nineteen cases; two severe attacks of synovitis in one case; necrosis of the tibia in one case; endocarditis in one case; valvular disease of the heart in one case; sixth nerve paralysis in one case, and insanity in one case.

In 100 treated cases, there was: deafness in nine cases, in four of which there was improvement with treatment; large epitrochlear glands in one case; synovitis of the knee in two cases; slight aortic and mitral involvement in two cases; hemiplegia, question of central lesion in one case, and cerebrospinal syphilis with optic atrophy in both eyes in one case.

INJURY ASSOCIATED WITH INTERSTITIAL KERATITIS

Igersheimer questions whether injury is coincident or casual. Cunningham reports seven cases, in 401, in which the attack seemed to have been precipitated by injury. Spicer reports that 3 per cent of his cases showed direct association with injury. In cases in which interstitial keratitis develops, the injury is usually very trivial, such as would be incapable of having any after-consequence in healthy eyes. In Langendorff's[12] 165 cases, the interstitial keratitis followed trauma in 1.8 per cent of the cases. Mohr[13] reports only twice in 670 cases that trauma was the etiologic factor, and these were unquestionable.

In our 200 cases, there was a history of trauma in six cases, or 3 per cent.

CASES IN WHICH MORE THAN ONE MEMBER OF A FAMILY PRESENTED INTERSTITIAL KERATITIS

Spicer writes: "A similar course is often run when two members of the same family are attacked." In our twenty-two groups of more than one of the same family with interstitial keratitis, we have two families in which the mother and two of her children have had interstitial keratitis. In one family the attack of interstitial keratitis in the mother was unquestionably the most severe case of interstitial keratitis seen in our hospital in years. In this mother, we cannot rule out the possibility of an acquired syphilis. Final vision was: right eye, shadows; left eye, 20/200. Her daughter had a severe attack, with a relapse in one eye. Final vision was: right eye, 20/100; left eye, 20/70. The son had a moderately severe attack in one eye, while in the other there never were any acute symptoms of inflammation, but ophthalmoscopic examination showed that there had been a mild anterior choroiditis. Final vision was: right eye, 20/20; left eye, 20/40.

In one family, three members of the same childship had interstitial keratitis. The older sister had a severe attack in both eyes with a final vision of: right eye, 20/70; left eye, 20/100; the younger sister had a less severe attack with a final vision of: right eye, 20/70; left eye, 20/70, and the brother had a very mild attack with a final vision of right eye, 20/20; left eye 20/20.

In the case of two sisters, the elder had a severe attack in both eyes and is absolutely deaf, whereas the other sister had a mild attack, the corneas showing very thin nebulae and vessels, and there was a slight anterior choroiditis present in both eyes. Final vision was: right eye, 20/30; left eye, 20/30. In the case of two brothers, the elder had a very severe attack in both eyes lasting one year and ten months, with a recurrence in one eye lasting eight months. The younger brother had a mild attack leaving practically no after results. Only a very few vessels in one cornea, and a very mild anterior choroiditis in the other eye remained.

In another family of two brothers, one had a moderate attack and the other a severe one. In the case of two sisters, the interstitial keratitis ran a very similar course as to severity, duration and final outcome. In both sisters the attack in both eyes developed late, in one case at the age of 22, and in the other at 28 years. Both cases were characterized by a non-inflammatory interstitial keratitis. At no time was there vascularization of vessels in the cornea, and in both the fundi were normal.

We have six families in which there is more than one member of the same childship with interstitial keratitis in which the attacks were severe and practically of equal severity in the two members of the family; six families in which two members of the same childship had a moderate attack and of practically the same severity and five families in which the severity varied in members of the same childships. In five families we had insufficient data of the attack in the second member of the childship of which our patient was a member to compare the severity of the two cases.

CAN INTERSTITIAL KERATITIS BE AVOIDED BY THE TREATMENT OF HEREDITARY SYPHILIS IN EARLIER YEARS?

We have ten patients who received antisyphilitic treatment before the attack of interstitial keratitis, and it seems desirable that the cases should be reported at length.

Case 1.—D. M., a boy, with undoubted signs of hereditary syphilis, developed a paralysis of the third nerve of the right eye in the early months of life. As far as could be ascertained, his treatment up to the age of 5 consisted largely in the use of iodides combined with inunctions. At 4 years of age, he developed in the right eye an interstitial keratitis of moderate intensity, which lasted for about five months. At this time he came under the care of practitioners thoroughly qualified in the handling of syphilis, and was given thorough treatment with mercury over the succeeding four years. In 1908, then at the age of 7, and three years after the involvement of the right eye he developed a mild interstitial keratitis in the left eye, which ran its course in about ten weeks and cleared up almost completely. Seven years later, in 1915, the vision in the left eye with a minus cylinder was 20/20; vision in right eye, fingers at 3 feet, the cornea showed a slight opacity and a number of vessels in the cornea were to be seen.

Case 2.—D. M., a girl, when 16 years of age, had an osteomyelitis of the ulna. Her Wassermann reaction was strongly positive and the diagnosis of inherited syphilis was made. During the year 1917, she received six injections of arsphenamin, six in 1918, and eight in 1919. In April, 1919, two years after the treatment began, when she was 18 years old, an interstitial keratitis developed in both eyes. The inflammation was of moderate severity, lasted eleven months, and final vision two years later was: right eye, 20/30; left eye, 20/30. In the right eye there were opacities of the cornea, and in the left very faint nebulae.

Case 3.—H. C., a man, developed a synovitis of the right knee when 12 years of age. The Wassermann reaction was moderately positive. An older brother had had interstitial keratitis. The father had syphilis. Diagnosis of congenital syphilis was made. Treatment consisted of mercury inunctions and mercury and chalk by mouth over a period of two years. A few months after he began treatment, a very mild attack of interstitial keratitis developed in the left eye, which cleared up without leaving any opacity of the cornea. The acute inflammatory symptoms lasted only twelve days. There was no opacity of the cornea in the right eye, but there were a few fine vessels in the cornea. The left eye shows neither vessels nor opacities in the cornea, but there are a few very small areas of choroidal changes in the periphery of the fundus. Vision is: right eye, 20/20; left eye, 20/20.

Case 4.—G. V., a boy, developed unmistakable active signs of hereditary syphilis soon after birth, and was given continued treatment with inunctions twice a day for two years, followed by mercury and chalk for a year longer. At the age of 9 months, he developed in one eye a uveitis with a small hypopyon. This ocular disease cleared up within a year, but general treatment was continued. Four years later he developed an interstitial keratitis in both eyes, of moderate intensity. The duration was seven months; vision was: right eye, fingers at 2 feet; left eye, 20/20 without correction.

Case 5.—C. J., a boy, developed unmistakable signs of congenital syphilis soon after birth. Treatment began immediately, and the patient had a long series of neo-arsphenamin injections for three years. Five years later interstitial keratitis developed in the right eye, lasting seven months. Apparently the left eye was not involved.

Case 6.—N. G., a girl, when 2 years old, had a syphilitic skin lesion and a positive Wassermann reaction. A sister had congenital syphilis and a positive Wassermann reaction. The patient received antisyphilitic treatment for two years; during this time she received three injections of arsphenamin and sixteen of mercuric chlorid. Two years after treatment, a mild attack of interstitial keratitis in the right eye developed which lasted two months.

Case 7.—A. C., a girl, in January, 1920, developed undoubted signs of inherited syphilis and marasmus, when 3 months old. The Wassermann test was positive. A sister, at 2½ years of age, had interstitial keratitis. The father's Wassermann reaction was strongly positive. The patient received two injections of arsphenamin, in 1920, mercury inunctions, and treatment by mouth for fifteen months. April 6, 1920, she developed a marked hydrocephalus. Four years later an interstitial keratitis developed in the left eye. She had a moderately severe attack of interstitial keratitis in both eyes lasting two months. In 1924 she received five neo-arsphenamin injections and treatment by mouth. The Wassermann reaction was still positive in 1925.

Case 8.—W. L., a boy, 19 years old, whose sister had an interstitial keratitis, came in for observation at the request of the social service worker. His Wassermann reaction was positive, and he was given arsphenamin injections. After the fourth injection of arsphenamin he developed marked arsenical poisoning, and two months after treatment developed a very severe type of interstital keratitis in both eyes lasting four months.

Case 9.—E. B., a boy, was under treatment for deafness and congenital syphilis from 9 months of age until he was 8 years old. Mercury inunctions, mercury and chalk by mouth and seven arsphenamin injections were given. When the patient was 25 years of age, interstitial keratitis developed and lasted four months. Vision was: right eye, 20/20; left eye, 20/20. There was some corneal opacity in the left eye. The right eye was normal.

CASE 10.—J. M., a boy, aged 12, had a strong positive Wassermann reaction. A brother had interstitial keratitis and positive Wassermann reaction. The patient received three injections of arsphenamin, and six months later developed an interstitial keratitis of moderate severity in both eyes, which lasted ten months. Final vision was: right eye, 20/20; left eye, 20/20. The final Wassermann reaction was positive.

These ten cases would seem to show that it is extremely difficult, perhaps impossible to prevent the development of interstitial keratitis by the use of the antisyphilitic treatment in earlier life. It is desirable, however, that all these cases be reported, as no final conclusion can be drawn until a much larger material has been gathered and analyzed.

PHLYCTENULAR KERATITIS

In 200 cases, twelve patients, or 6 per cent, had phlyctenular keratitis before, during or after the attack of interstitial keratisis. In three cases, it occurred before, and in two of these cases there were several attacks of phlyctenular keratitis before the onset of the interstitial keratitis. In four cases, the phlyctenular disease occurred during the attack of interstitial keratitis and in two of these cases it was very severe.

Five patients had phlyctenular involvement after the interstitial keratitis had cleared up.

Two patients who had phlyctenular keratitis died of pulmonary tuberculosis. One of these patients had congenital syphilis, acquired syphilis and pulmonary tuberculosis. This merely emphasizes the fact that tuberculosis frequently develops in cases of congenital syphilis.

LATER INVOLVEMENT OF EYES

In our cases there were nine eyes with phlyctenular kerato-conjunctivitis; two eyes with staphyloma of the cornea; one eye with ectasia of cornea and buphthalmos; two eyes with posterior staphyloma; three eyes with episcleritis; one eye with scleritis; one eye with kerato-scleritis; three eyes with divergent strabismus; two eyes with convergent strabismus; four eyes with nystagmus, and one eye with paralysis of the sixth nerve.

MORTALITY OF PATIENTS WITH INTERSTITIAL KERATITIS

Eleven, or 5.5 per cent of the 200 patients have died, one at 14 years, of multiple periostial abscesses, suppurative arthritis and pyemia; one at 12 years, of acute lobar pneumonia; one at 2 years, of acute phlegmon of the larynx, a complication of bronchopneumonia; one at 32 years, of pulmonary tuberculosis; one at 30 years, of valvular heart disease; one at 23 years, at the Danvers Insane Asylum, of myocarditis; one at 6 years, of pyothorax, chronic purulent bronchitis; one at 20 years, of acute poliomyelitis, bronchopneumonia and nephritis; one was killed by a truck (his vision was: right eye, 5/200; left eye, 20/200); one was killed by walking into elevator well (his vision was: right eye, 20/50; left eye, 20/50), and one was killed by an automobile.

SYPHILIS IN OTHER MEMBERS OF THE FAMILY

In eighty-four of the 200 cases, there was a record of syphilis of the parents.

Fifty-five mothers were tested serologically for syphilis; in forty, or 72 per cent, the Wassermann reaction was positive. In fifteen, the Wassermann reaction was negative, but in the latter group seven acknowledged syphilis.

Thirty fathers were tested serologically for syphilis in thirteen, or 43 per cent the Wassermann reaction was positive; in seventeen the Wassermann reaction was negative; seven in the latter group acknowledged syphilis, and the wives of seven others had positive Wassermann reactions.

There are thirty-eight cases in which there is a history of inherited syphilis in the other members of the childship of which the patient was a member. Twenty-two patients had a brother or a sister with interstitial keratitis, and sixteen others had a brother or sister with a positive Wassermann reaction or other symptoms of inherited syphilis.

Forty-one brothers and sisters of patients in this survey had positive Wassermann reactions.

In two groups of our cases in which more than one member of the family had interstitial keratitis, the eyes of the mother and two children were found involved. In the case of one mother, we could not rule out the possibility of an acquired syphilis. In a group of three members of the same childship, two sisters and one brother had interstitial keratits. In the survey, there are twenty-seven cases of "only children."

In six cases in the survey, acquired syphilis cannot be ruled out.

INFANT MORTALITY IN FAMILIES WITH INTERSTITIAL KERATITIS

In forty-five cases, there was one or more miscarriages. The total miscarriages amounted to 113. In twelve cases, there were one or more stillbirths. The total of stillbirths was eighteen. In thirty-six cases, there were one or more infant deaths. The total of infant deaths was 89. Eighteen mothers had miscarriages, only. Three mothers had stillbirths, only. Fourteen mothers had infant deaths, only. There were two cases in families with miscarriages, stillbirths and infant deaths. There were six cases in families with miscarriages and stillbirths. There were twenty cases in families with miscarriages and infant deaths. There was one case in a family with stillbirths and infant deaths. Seventy-eight of the patients were in a good childship; i.e. there was no history of miscarriages, stillbirths or infant deaths in family. Fifty-eight of the patients were in a childship in which miscarriages, stillbirths and infant deaths have occurred.

MORTALITY AMONG PARENTS OF THE 200 PATIENTS

Twenty-two mothers and thirty-four fathers had died. Causes of death of mothers were as follows: Nine due to tuberculosis; one to heart disease; one to childbirth, and one to insanity. We have no data as to the cause of death in ten cases.

Causes of death of fathers were as follows: Eight died of tuberculosis; three of insanity; one of general paresis; two of cerebral hemorrhage; one of heart disease; one of diabetes; one of influenza; one by accident, and two of pneumonia. We have no data as to cause of death in fourteen cases. Seven fathers had deserted. In seven cases, the patients were illegitimate.

SOCIAL AND ECONOMIC SIGNIFICANCE OF INTERSTITIAL KERATITIS

The question as to what extent the reduction of vision resulting from interstitial keratitis affects the patient's status in society is of vital interest. To what extent does the handicap affect his schooling? In 200 cases, fifty-nine of the patients were not of school age at the time of the attack of interstitial keratitis. Thirty-one of school age lost no time in their school course; i.e. they were able to keep up with their classes. Fifty-four lost from a month to three years. Some of these never returned to school, and on this account their occupation was undoubtedly of a lower type than if they had completed their education. Forty-eight of the patients state that their lowered vision handicapped them in their work for a livelihood, and they had to take jobs for lower grade work, with the accompanying lower pay, which placed them in many cases in a lower grade of society. A large percentage of these patients are incapacitated by failure of hearing as well as sight, which leaves only a very low grade of work with a low remuneration open to them. In times of business depression, they suffer even more. Of these cases, four were placed in Perkins Institute for the Blind; twenty-five were referred to the State Division for the Blind, and two to the school for the deaf.

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THE TREATMENT OF GONORRHOEA IN THE MALE

BY GEORGE GILBERT SMITH, MD., F.A.C.S.

THERE is probably no disease which varies more widely in the severity of its attack upon the human organism than does gonorrhoea. In one individual it may occur as a transient, mild urethritis, hardly perceptible by the host. In another, it may give rise to the most distressing complications such as crippling arthritis, or may even cause death. These variations in severity are due to the virulence of the particular strain of gonococcus, to the resistance of the patient to the organism and to the anatomical conditions which affect drainage.

As a result of the difference in virulence, treatment which is effective in one case is ineffective in another. One often wonders how it is that so large a number of cases apparently get well without any treatment at all, or at most, with some internal medication such as methylene-blue or sandalwood. Undoubtedly there are numerous cases, probably those in which the infection is confined to the urethral mucosa and does not invade the accessory glands, in which complete recovery does take place quickly and without local treatment. Some cases of apparent cure later recur, or have a persistent gleet. In these, a focus can be demonstrated, such as the prostrate or vesicles, from which the organism issues to reinfect the urethra. It has been stated, and I believe it to be true, that in the vast majority of cases the gonococcus dies out within two years, whether the disease is treated or not; in such cases, residual inflammatory conditions may persist. I have seen two cases in which the organism appeared in smears 4 and 4½ years respectively after the initial infection. Of course, in such cases it is impossible to ascertain the truth of the patient's statement that he has not been reinfected.

Generally speaking, less harm results to the patient from the absence of treatment than from too vigorous manipulation. Remembering that natural processes are the most potent factor in eradicating any infection one should err on the side of too little treatment rather than too much; on the other hand, one should be ready to seize the opportune moment to aid those physiological phenomena which offset the bacterial invasion.

So much for generalities. Let us now consider the actual treatment of an acute gonococcus infection. Vigorous exercise and abrupt motions, such as occur when running, must be avoided. Factors which lead to pelvic congestion, such as sexual excitement, long automobile rides, getting wet or chilled, are to be shunned. The frequent flushing of the urethra by dilute urine aids drainage. The diet should be simple and should not include highly seasoned foods. Meat in moderation does no harm. Alcohol is of course not to be taken. A common practice is to wear a pledget of cotton over the meatus This dams back the secretion and favors the extension of the infection to the posterior urethra. A good dressing consists of a piece of 2½ inch bandage six inches long. A slit is cut in the middle, parallel to the long axis. The glans penis is inserted through this slit until the gauze rests in the coronal sulcus. The prepuce is drawn down over the bandage so that the two ends of the latter project from beneath it, thereby protecting the clothing and not obstructing the meatus.

Internal antiseptics are useful in many cases, but are not essential. During the stage of acute posterior urethritis, some alkalizing diluent, such as potassium citrate, given in the dose of 10 grains in a glass of water every 4 hours, is beneficial. Capsules of pure sandalwood oil, each containing 10 minims, taken three times a day in the middle of each meal, seem to have a soothing effect on the mucous membrane of the bladder neck and urethra. Urotropin given during the acute stage is likely to be irritating. I do not use it except in those cases where both urines are still cloudy a month or more after the beginning of the attack.

The so-called "abortion" of an attack of urethritis, as devised by Ballenger of Atlanta, consisting of injecting a small quantity of argyrol and sealing the meatus with collodion, does not appear to me to be a wise method of procedure. While some immediate cures have undoubtedly been obtained, there is considerable risk of damming back the secretion so that a posterior urethritis is set up. I believe that, taking an average of all cases, better results will be obtained from thorough routine treatment.

In my experience, the best treatment consists of daily irrigations of the anterior urethra with warm (105°-110° F) potassium permanganate solution, given with a 2 way glass meatal nozzle from a Valentine irrigator 3 feet above the patient. This is the form of treatment advised by Janet, Luys and the English venerologists. Some of the authorities advise giving this irrigation twice a day for the first few days. The solution should be very weak in the most acute cases—(1-10,000) gradually increasing to 1-4000. In some cases this treatment alone will control the discharge; in others it will be necessary for the patient to use an instillation of argyrol, at first of 5%, later of 10%, 2 or 3 times a day. No more than 5 c. c. should be injected at a time, and this amount should be held in for only a moment at first, later, for five minutes. There is a prejudice against early local treatment based on the belief that it "forces the infection back."

A study of 50 cases of gonococcus urethritis which beyond a doubt were acute infections uncomplicated by a preceding chronic urethritis shows that posterior infection had occurred in 19 cases before any treatment was instituted. In 8 cases only (16%) did the infection remain anterior throughout the course of the disease. Many venerologists, basing their opinion upon the clarity of the second urine, will say that this percentage of posterior infections is too high. In the series of cases just quoted, the presence or absence of posterior infection was determined not by the appearance of the second urine, but by the appearance of the first urine voided after irrigating the anterior urethra thoroughly with potassium permanganate. This washes out the anterior urethra, and if the first few drachms of urine then voided are hazy or contain shreds unstained by the permanganate, one may be sure that the posterior urethra is infected. The second urine becomes cloudy only when the amount of discharge generated in the posterior urethra is sufficient to run back through the internal sphincter and contaminate the bladder contents.

It is my belief that as soon as the posterior urethra has been shown to be infected, it should be treated. This is best done by massive irrigation with potassium permanganate, allowed to flow into the bladder by the Janet method. This is accomplished by means of a gravity irrigator hung 3 feet above the table, and a Valentine urethral nozzle. The patient is instructed to relax his muscles as if he were about to start the act of urination; about 3 out of every 4 patients can learn to do this quite readily. Patience is required at first, but the acquisition of this simple feat more than repays the time spent in learning it. If it cannot be learned, the irrigations may be given with a No. 14 soft rubber catheter introduced very gently.

This treatment is carried out daily, if possble; at least two treatments a week are a necessity. The question when to begin prostatic massage cannot be answered categorically. If the urethritis is clearing up rapidly, the prostate had better be left alone until the acute stage is over. If, on the other hand, a posterior urethritis continues, it is reasonable to believe that it is being fed from foci in the prostate and vesicles. In such cases, after two weeks of treatment, a very gentle stroking of the prostate and vesicles may be tried. It is not unusual to notice that a prostrate which when first palpated was soft and small, at the next visit has become firm and nodular. This probably means that the first massage was ill advised or too roughly executed. Twice a week is often enough to massage the gland. If symtoms of bladder irritability develop, massage should be stopped and rectal injections of hot water twice a day ordered.

Under the treatment outlined above, the urethral infection should clear up in from one to four weeks. If both urines remain hazy, as they occasionally do, this is probably due to a mixed infection which involves the bladder mucosa. Sandalwood oil in 10 minum capsules or hexamethylenamin in 15 grain doses should then be given three times a day. As a rule the urethra so treated clears up entirely, with no areas of induration. The urine becomes clear, without shreds. In the minority of cases, a shreddy condition persists, and there is persistent gleet. This means that there are areas of induration or infected urethral glands, the treatment of which consists of gentle dilatation with sounds. As a rule, sounds should not be passed until at least a month after the inception of the infection. Occasionally a preexistent stricture exists, and this must be kept open enough to permit adequate drainage, even in the face of a purulent discharge. The passage of instruments should always be followed by irrigation of the urethra and bladder.

The treatment of the prostate and vesicles by massage must be kept up long after the urethritis has cleared up. This should be done at first twice a week, later once a week, or even every fortnight. Nature is working with the surgeon and is constantly carrying on a reparative process, absorbing the exudate and destroying the invading organism. By massage, one expresses secretion inspissated in the ducts, and causes a temporary local congestion which stimulates the healing process. Two types of infection persist; in one, the prostate itself is involved, becoming hard and stony. With such a condition there is usually a rapid clearing of the urethra and but little treatment is needed. The more usual and troublesome condition is that in which the vesicles are involved. As persistent foci of infection these organs are far more stubborn that the prostate itself. In my experience, massage of the vesicles does not pay dividends if continued regularly for more than three months. At the end of that time, if they contain pus in such amounts that the expressed secretion shows more than 8 or 10 leucocytes per field, the treatment should be interrupted for a month. Urethral irrigations may be continued, and hot rectal irrigations or diathermy may be tried. A vacation, with an out-of-doors existence, will sometimes do a great deal towards clearing up the inflammation. If the infection persists, another course of massage may be tried, or massage given at longer intervals, such as every 2 weeks or every month. Gradually the amount of pus decreases, except in those cases, fortunately few in number, in which it seems to be impossible to get the vesicles into normal condition. For such cases some men irrigate the vesicles through the vasa deferentia; even this will not always succeed, and if there are no signs of systemic absorption, one may have to admit failure to clear up the vesiculitis. If signs of absorption, such as arthritis, occur, or if the urethra becomes reinfected from the vesicles, surgical drainage or removal may be the only means of remedying the condition. Fortunately, this last method is seldom necessary in cases that have been well looked after, for the pus becomes sterile, or at most contains only a few diphtheroids or staphylococci.

The vast majority of acute cases, treated from the outset, will clear up entirely. Every case should have an examination of the prostatic secretion before being discharged, even if the second urine has always been clear.

As an actual example of the results obtained in treating acute urethritis, let me cite the results of 35 cases in which the conduct of the case was carried on to its conclusion.

LENGTH OF TIME TO ATTAIN A CURE

1 week	1	7 weeks	1	6 months	3
2 weeks	3	2 months	3	7 "	2
4 "	1	3 "	5	9 "	1
5 "	1	4 "	3	10 "	2
6 "	1	5 "	4		

Besides these, there were 4 cases which appeared to be cured at the end of 4, 5, 12 and 18 months respectively, but in whom a chronic vesiculitis persisted, as evidenced by the persistence of pus in the vesicular secretion.

Many of the above cases were probably cured in less time than that recorded, but were kept under observation and discharged as cured after the time stated in the table. The brief cases were of course the simple anterior infections. A definite prostatic or vesicular infection means at least 3 months, often 6 months, under treatment and observation.

The chronic or subacute case, that one who presents himself as a new problem at least several months after the beginning of his attack, requires first of all accurate diagnosis as to the site of his infection. Every case of this sort should have his urethra calibrated and his prostatic and vesicular secretion examined, not once, but several times, for pus may be found only after several massages. Under the routine treatment with irrigation, massage and dilatation, such cases should clear up in from 3 to 6 months.

Space permits only brief mention of the treatment of the more common complications. In this series of 50 cases, unilateral epididymitis occured 8 times, bilateral, once. Arthritis occurred 4 times, only two of which were at all serious. Both these involved the knee, and a perfectly functioning joint was secured. Perineal abscess occurred once, perivesiculitis once, acute prostatitis twice, pulmonary infarct once. Several of these complications were present in the same individual. There were two men who were hard hit by their infection, and developed numerous complications. For epididymitis I have found flaxseed poultices to be the best routine treatment. Epididymotomy was done twice. Recently diathermy has been employed with very satisfactory results. In arthritis the employment of gonococcus vaccine in rather large doses, together with local treatment, has appeared to give good results.

The successful treatment of gonorrhoea in the male is not easy. If one is too conservative, the infection lingers; if one pushes the treatment too much, complications may be caused. The proper degree of aggressiveness calls for much judgment, and a complete cure demands patience.

TREATMENT OF GONORRHOEA IN WOMEN

BY FRANK A. PEMBERTON, M. D., F. A. C. S.

THE gonococcus attacks several different organs in the adult female. The cervical canal is practically always infected, the urethra usually, and the ducts of Bartholins and Skenes glands less frequently. The vagina is probably not often infected except in children and women past the menopause. The endometrium may be temporarily infected but the disease does not appear to linger there. The tubes are quite frequently attacked but the gonococcus soon gives way to other bacteria.

This predilection for certain organs depends on the fact that the gonococcus grows easier on a single layered epithelium and it causes a surface infection. It does not thrive in closed cavities. The cervical canal is covered by a single layer of high columnar epithelium and is lined by microscopic racemose glands having a similar epithelium. The germs lie on and beteen these cells and in the ducts of the glands but do not attack the racemose parts ordinarily. They may invade the outer parts of the submucosa in the acute stage. In the chronic stage the germ is found in clusters between the epithelial cells along the cervical canal and just inside the ducts of the glands. The mucosa of the cervical canal is thrown up in longitudinal folds which offer protection to the bacteria against drugs and the ducts of the glands are microscopic so that the drugs do not enter them.

The internal os probably acts as a barrier to up~~ward exten~~tion of the process to some extent. Infection of the tubes by way of the endometrium as a bridge is common however. It is generally agreed that true gonococcus endometritis is uncommon and when it occurs, it does not last long.

The vagina of the adult is lined by a thick stratified epithelium which is resistant to infection. Actual invasion by the gonococcus does not often occur except in children and old women where the layers are fewer and the cells are further apart. The vaginal lining is, however, inflamed by the irritating discharge which is poured out of the cervix, so it is seen to be reddened and swollen. One important characteristic of the gonococcus is that it secretes a very strong toxin which has a decidedly irritating effect on the tissues with which it comes in contact.

The substance of the preceding paragraph applies to the infection of the vulva also. Gonorrhoeal vulvitis occurs at the extremes of age but in between there is an irritation caused by the discharge which leads to extreme swelling of the labia in neglected cases but which clears up quickly when measures for ensuring cleanliness are used.

The ducts of Bartholins and Skenes glands are lined by a thin stratified epithelium which the gonococcus can and does invade causing a true infection. The depths of the glands however, are not actually infected as they are practically closed cavities which appear to be immune. The swelling resulting from the inflammation closes the ducts, interferes with drainage, and prepares the soil for infection of the gland itself with other pyogenic bacteria. This causes the abscesses which are common in both situations. During the chronic stage the ducts of these glands often harbor gonococci. A drop or two of pus can be squeezed out in which gonococci may be found.

The urethra is also lined by a thin stratified epithelium which is invaded in many cases causing a true urethritis. There are some glands along the posterior wall of the urethra the ducts of which may become infected and be very resistant to treatment. Ordinarily it seems as if the process cleared up quickly in the urethra itself. Ascension to the bladder is uncommon because of the short urethra, tight sphincter, and frequent washing during urination. Inflammation of the Skenes glands causes symptoms like those of urethritis so they should be carefully examined.

The diagnosis depends entirely on microscopic examination of the discharge. During the acute stage thick creamy pus is found in large amounts in the vagina and between the folds of the vulva and is so characteristic that it is fair to assume that the case is one of gonorrhoea until repeated microscopic examination has failed to demonstrate the organism and it should be treated on that basis. The diagnosis depends on finding the characteristic biscuit shaped diplococci inside of leucocytes. The easiest way of staining is by Pappenheim's method in which the cocci are bright red but this should be confirmed by using Gram's method in which they are decolorized and stained with the counter stain.

During the acute stage the demonstration of the organism is comparatively easy because they are present in large numbers. It should be remembered however that there is an enormous amount of discharge in proportion to the number of leucocytes containing gonococci and therefore one may have to search some time to find the evidence. During the chronic stage there are few gonococci and it is difficult to demonstrate them. Smears should be taken from all possible sites. They should be taken from the urethra after an hour or more has elapsed since urination. Any discharge in the introitus of the vagina should be wiped away and the urethra should be examined for swelling of Skenes glands which are on each side of the meatus. The urethra is stripped downward by one finger in the vagina and any material obtained put on a slide. Skenes glands may be similarly treated. Bartholins glands should be examined for redness and swelling of the ducts which empty on each side of the vagina just inside the remains of the hymen and then they should be gently squeezed between the thumb and forefinger to obtain discharge for examination.

Smears from the cervical canal are more likely to show the organisms during the chronic stage if they are obtained just before and after menstruation when more mucus is secreted by the glands in the cervix which may carry the exudate out with it. The material should be obtained from the vagina where it has collected and from the canal itself with a medicine dropper or wire loop.

There is a place between the clitoris and the labia which is moist and covered with thin epithelium in which gonococci are occasionally found. This should not be neglected as a possible point of infection in any suspicious case and secretion obtained from it should be examined.

The complement fixation test may be useful in doubtful cases if it is done by a competent man. A negative test is of much less value than a positive one, except when it has been positive before. Polak believes that it may be evidence of cure in the latter case.

In regard to symptoms attention should be drawn to the fact that gonorrhoea may be present with few or no subjective symptoms, especially if the patient has had leucorrhoea. Most acute cases, however, complain of discharge, burning and frequent and painful micturition. It is important to question the patient at each visit in regard to pain in the lower abdomen which might mean the occurence of salpingitis and insist on rest in bed if she has had any.

The treatment should include first of all written directions in regard to preventing infection of the eyes; the danger of the use of the patient's towels by others; and vice versa; that the patient must not use the bath tub; that she must wash off the toilet seat with soap and water after using it; and must wash out the hand basin. Most patients have very little knowledge of the danger and means of infecting others and forget verbal instruction quickly. She should sleep alone. She must not have sexual intercourse even with protectives until she is well because that may be a cause of extention of the process to the tubes. She should be in bed during the acute stage of ten days or two weeks because the process quiets down faster. This is rarely complied with because it means telling others about her trouble but it is well worth while. The extension of the infection to the tubes is more likely to occur during menstruation so it should be insisted on that the patient stay in bed at that time. A raised position is probably better than lying flat because of the chance for drainage. We feel that extension to the tubes is more likely to occur in those women who already have a retroversion of the uterus so they should be watched carefully and kept quiet. During the acute stage the patient should be in bed, drink large amounts of water and be on a bland diet. Cathartics should be used as there is some danger of causing a gonorrhoeal proctitis if enemata are given. The vulva should be washed off four times a day, careful attention being given to the folds between the labia, with any mild antiseptic solution, such as boric acid or permanganate of potassium. When the swelling has quieted down active treatment may be begun.

The type of treatment varies a good deal and perhaps it would be wise to give our method and then explain the variations. The patient is told to take three douches a day of boric acid solution, the idea being to wash out the irritating discharge. Lately we have used a weak solution of soap suds followed by plain water. The douche simply acts as a mechanical cleanser and not as a bactericidal agent. Once a day the vagina is filled with two ounces of 1% Mercurochrome solution by means of a long tipped glass syringe and the labia held together for two or three minutes, after which it is carefully dried out with cotton pledgets through a speculum. When the tenderness lessens so that the speculum can be easily stood by the patient the cervical canal is cleared of mucus by cotton sticks or a suction apparatus and the Mercurochrome is applied in the cervical canal with a well soaked swab also. This can be done more efficiently with the patient in the Sim's position but that requires the aid of a nurse. This is kept up for about ten to fourteen days and it seems to us that the cases clear up much more quickly than when treated with the silver salts. The reason for using Mercurochrome is that it penetrates the tissue and actually reaches the organisms. We have not had any symptoms of poisoning when using it in this way. This treatment is carried out in the office, the patient coming every day. After about two weeks of it the discharge is only slight and she is then treated three times a week by drying the vagina and cervical canal and then applying 2% Mercurochrome to both on a swab. Care must be taken to avoid entering the uterine cavity and still the cervical canal must be well soaked as this contains the real nidus of infection. This is kept up for at least four weeks, smears being taken from time to time to check up on the treatment. All active treatment is stopped during menstruation.

The treatment of the urethritis is much the same. Nothing active is done during the early stage of the disease, dependence being placed on frequent urination for irrigation. The act is painful and sandalwood oil in ten minim doses three or four times a day seems to have a soothing effect. When the acute symptoms have subsided 1% Mercurochrome solution is injected into the urethra when the other treatment is carried out. Care must be taken to inject only about two cubic centimeters of the solution, in order to avoid carrying the infection into the bladder, and the urethral lining must not be traumatized.

We use a glass syringe with an asbestos packing piston and a tip one inch long by three millimeters in diameter for this instillation.

It is not uncommon to have cases in which the urethritis is mild and clears up without treatment. Never the less the urethra should always be carefully examined for discharge and treated if necessary, especially in the chronic stage.

Most authorities use about the same general plan that we have outlined but use argyrol, protargol, and silver nitrate instead of Mercurochrome and report good results. The main point is that the surface must be freed of mucus and discharge before applying the drug, Douches are held to be contraindictated by some for fear of carrying the infection in if the cervix is not already involved. We feel that such cases are very uncommon and that the beneficial effect of the cleansing is important. Practically all use douches during the chronic stage.

The treatment of the infection of the ducts of Bartholins and Skenes glands is to do nothing during the acute stage. If later they are found to be infected injection of drugs into the duct with a hypodermic syringe and a blunt needle is advocated by many. We have not found this satisfactory because it is difficult to introduce the needle into the opening contracted by the swelling from the infection. Cauterization under local anaesthesia with a fine cautery which lays the duct open allowing drainage is beneficial. In the case of Skenes glands we believe better results are obtained if the whole gland and duct are excised. The same applies to Bartholins gland if real abscess formation takes place because they are prone to quiet down and flare up again repeatedly.

If at the end of two or three months of treatment gonococci are still found in the vaginal discharge an attempt must be made to locate the actual organ affected as described above by examining smears from each one.

If it proves to be urethra this should be treated with silver nitrate solution two to four per cent. This generally clears it up if the treatment is persistent. A chronic infection in Skenes or Bartholins gland or duct is most surely eradicated by excision. The chronic infection in the cervical canal is extremely difficult to cure by means of drugs but they should be tried faithfully. Recently a method of treatment by heat has been devised and good results are reported by Corbus and O'Connor. It has long been known that the gonococcus is killed by relatively low degrees of heat. Therefore the method consists of putting an electrode in the cervical canal and raising the temperature of the tissue to about 117 degrees F. for twenty minutes at a time. This may be repeated every seven to ten days until a cure is effected. This method involves instrumentation which is contraindictated during the acute and subacute stages. It should be used only during the chronic stage and by an expert until its dangers at other times are more definitely determined.

One characteristic of the gonococcus is that it prepares the soil for a chronic mixed infection to follow it. This frequently results in a chronic endocervicitis with its annoying discharge which does not contain gonococci, and the formation of cysts and eroded areas. If the smears are repeatedly negative it must be consided to be a chronic non-specific endocervicitis and treated accordingly.

The determination of whether a case is cured or not depends on getting repeated negative smears. A good method is to take smears before and after menstruation as already described, each month for three consecutive negative examinations and then to wait for three months. If the smears are negative then wait three months longer and then irritate the cervical canal by applying a 20% silver nitrate solution. This may cause a latent infection to light up enough to bring out some gonococci to be found in smears taken three to seven days later. If at the end of a year gonococci have not been found at repeated examinations and there is no discharge, the patient may be considered cured. It is not uncommon however for the infection to last longer if the case does not receive efficient treatment from the first. Good treatment dependes on coöperation on the part of the patient and that is usually difficult to obtain among those afflicted with gonorrhoea.

Extension to the tubes is the most feared complication. It does not occur until late in the course of the disease as a general rule but it should be thought of at all times. Pain in the lower abdomen, usually of a cramp like character at first, is the danger signal and calls for rest in bed. It may clear up without causing much damage or it may go on to any extent up to the formation of pus tubes and a pelvic abscess. If it is getting worse and gentle bimanual examination reveals tenderness and thickening or masses in the regions of the tubes hot douches should be started consisting of four to eight quarts of water at 110 degrees F. three or four times a day. Either heat or cold may be applied to the abdomen depending on which gives the patient more relief. Cathartics should be mild or none to prevent the spreading of infection by active peristalsis, the main reliance being placed in small enemas. The raised position in bed probably assists localization in the pelvis. The rest of the treatment is patience while waiting for the process to quiet down. It may run a long course and the patient may have a high temperature for two weeks or more but operation is not indicated unless there is definite evidence of the formation of a pelvic abscess and the patient seems to be losing ground. When the temperature has been normal for two weeks the use of tampons to hold the pelvic organs quiet seems to assist in the process of resolution. The douches should be kept up and the patient should rest most of the time until the pelvis is free from tenderness and masses. If this does not come about at the end of three months and she has pain and dysmenorrhoea then operation should be considered.

It may be seen that treatment of gonorrhoea demands patience and coöperation on the part of physician and patient, the attempt being to assist nature by gentle measures rather than to eradicate the disease by aggressive action.

THE DOCTOR AND VENEREAL DISEASE*

BY EUGENE R. KELLEY, M.D., AND GEORGE H. BIGELOW, M.D., BOSTON

GONORRHEA and syphilis appear to be on the increase. Last year there were 5241 reported cases of gonorrhea, and 2325 cases of syphilis. This is an increase over 1923 of 7% for gonorrhea and 23% for syphilis. So far this year the reports are slightly lower than last year, but still well above 1923. Previous to this, the number of cases reported had been decreasing each year since 1920. The first explanation of the 1924 increase was that it represented a greater appreciation on the part of the medical profession of their responsibility in the control of these diseases, since reports of the prevalence of a given communicable disease must be the first step in intelligent control. In other words we felt that the increase was apparent rather than real. On further thought, however, this explanation seemed specious. No new measure for enlisting the coöperation of the practicing physician had been instituted, and it is only with considerable effort that coöperation in such apparently unproductive routine as the reporting of disease can be improved, particularly after the impetus incident to innovation has had time to die. This is further borne out by the statement of not a few clinicians that last year they saw more fresh infections both in the office and in the clinic than for a few years previous. This was particularly true with regard to primary lesions of syphilis, and it was syphilis that showed the greatest increase in reported cases (23%). The following statements are therefore presented in an effort to enlist the fullest coöperation of all practicing physicians to the end that this increase in venereal disease may be stopped. Without such coöperation all other agencies are helpless.

REPORTING

Beginning in October 1925, all communicable cases of gonorrhea and syphilis shall be reported to local boards of health, rather than to the State Department of Health, as heretofore. This is an advance. The local board will be responsible for the control of all communicable diseases within its jurisdiction. But how can it possibly control anything of which it does not know the existence? Such a change is made by the Department following the passage of a resolution by the Massachusetts Association of Boards of Health recommending the same. Chapter 215, Acts of 1925 reads that these diseases shall be reported "in accordance with such special rules and regulations as the department may make, having due regard for the best interest of the public."

Thus at the first visit after the diagnosis has been made, if the disease is considered to be in a communicable stage, and after the seriousness of the condition and the probable length of time required for treatment has been explained, special instruction towards the prevention of spread of infection should be given, particularly if the patient is a food handler, caring for children or married. Blanks for reporting can be obtained from the local health authorities. The proper numbered instruction sheet should be given the patient, after the perforated report stub similarly numbered has been detached. This does not have space for the name and address, but the other data requested should be filled in and mailed to the local board of health of the community in which the diagnosis is made. If the patient is a non-resident the information will be forwarded to the Board of Health where he is a resident.

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*From the State Department of Public Health.

When should the patient's name and address be reported? These should be given to the local board only when the physician is of the opinion that the patient is not complying with instructions and is therefore a menace to the public health. Occasionally this may occur at the initial visit when the patient may show that he does not intend to remain under treatment nor take the precautions necessary to prevent spread. More often it will be shown by a failure to return for treatment at the appointed time. Although slight irregularities of attendance may be inevitable, an unexplained lapse of three weeks should be considered as evidence that the patient is a "menace," but the report may be made at any time prior to that as the physician's judgment dictates. The blanks for reporting by name and address are also obtained from and should be sent to the local health authorities.

Doctors are very largely aware of their responsibility in getting under observation other members of the family of the venereally infected patient, but many do not feel any responsibility for care of the suspected source of infection outside of the patient's family. Bringing such sources of infection under treatment is one of the most baffling of all communicable disease problems, but it is certainly at the very heart of venereal disease control. This can be accomplished most effectively by the doctor inducing the patient to have the suspected individual come in for observation and treatment, if indicated. Where this is not possible the name and address of the suspected source should be sent to the local board.

LEGAL LIABILITY

But what legal liability does the doctor incur through making and reporting the diagnosis of gonorrhea and syphilis? There are many rumors of successful suits against doctors, but when efforts are made to follow these up no concrete information is obtainable. In other words it is another example of groundless apprehension initiated by a few who possess more imagination than facts. The legal authorities consulted on this matter are unanimous in asserting that the court will require above all else evidence of good faith on the part of the physician. The occasional error in diagnosis is condoned provided good faith can be established.

Some doctors have stated that, to hold in court, a diagnosis of gonorrhea must be backed up by a culture. Were this true the diagnosis of gonorrhea in sufficient quantity to give any hope of control would be impossible since gonococcus culturing is fussy, cumbersome and quite impracticable for general use. Also the culture is not serologically fool proof. The consensus of opinion is that if a smear has been taken and a positive report obtained good faith would be impossible to disprove, unless there was some ground on which to base the suspicion of substitution. But the culture would certainly be open to this same remote possibility.

There are two questions involved: First, is the physician liable to a suit for damages for erroneously or mistakenly diagnosing a patient as having venereal disease? Second, is the physicia subject to an action in tort for libel if he reports the name of the patient to the local board?

In regard to the first question the following cases collected by Mr. B. E. Bradley, of the Department Staff, point out clearly the duties and obligations imposed upon the physician in making a diagnosis whethêr it be venereal cases or others. In the case of *Small* V. *Howard 128 Mass. 131* the court sums up the liability of a physician, as follows:—

"He is bound to possess that reasonable degree of skill and experience which is ordinarily possessed by others of his profession; that he will use reasonable and ordinary care and diligence in the treatment of the case committed to him; and that he will use his best judgment in all cases of doubt as to the best course to pursue in his treatment. *He is not responsible for errors in judgment or mere mistakes in matters of reasonable doubt and uncertainty, provided he exercises ordinary skill and diligence.*"

In the case of *Niven* V. *Boland 177 Mass. 11* an action of tort was brought against two physicians for negligently making a certificate alleged to be false, to the effect that the patient was a dipsomaniac in consequence of which he was confined to a hospital for a long time. The court held that so long as the physicians acted in *good faith* and *without malice* they should be *exempt* from liability.

When the courts hold that a physician should be exempt from liability in cases where the patient was actually confined in an institution due to this error in judgment, certainly the courts would not hold a physician liable in making an erroneous diagnosis of venereal disease, provided he acted in good faith, without malice, and exercised ordinary skill, care and diligence in making the diagnosis.

In regard to the second question, namely, whether or not a physician is subject to an action in tort for libel if he reports the name of the patient to the local board the law is also equally clear. In the case of *Harriott* V. *Plimpton 166 Mass. 585* which was an action for slander against the physician Plimpton, in that he had said that the plaintiff was afflicted with a venereal disease rendering him unfit for marriage, thereby causing his engagement to be broken, the court said that in order to hold the physician liable, *malice* must be proved, and that in its absence the physician was not liable.

In the case of *Bradley* V. *Heath 12 Pick. 163* the court held that where words imputing misconduct to another are spoken by one having a duty to perform, and the words are spoken in *good faith*, and in the belief that it comes within the discharge of that duty, or where they are spoken in good faith *to those who have an interest in the communication, and a right to know and act upon the facts stated,* no action can be maintained in such cases, *without proof of the express malice.*

It is a fundamental principal of law that in actions for libel, truth is an absolute defense unless stated with malice. Therefore in cases reported by name to the local boards by the physicians, if the patient had the disease, the physician obviously would receive protection from the law.

In cases where the name is sent by the physician to the local board and it subsequently develops that the patient was not suffering from venereal disease, the law is again clear and to the point. If the physician after complying with the law in making the diagnosis, as discussed above, subsequently sends the name of the patient to the local board, and it develops that the patient did not have the disease, the physician would be protected if he acted in good faith and reported the case without malice. Obviously it is the legal duty of the physician to report the case. The law also gives the local boards an "interest" in the report, as well as certain obligations and the law gives the right to them to know and act upon the facts stated. Therefore the law says that both the physician and the local boards are protected in performing their obligations provided they act in *good faith and without express malice.*

TREATMENT

One effective method of combating any disease is to render the patient non-communicable at the earliest possible moment. In gonorrhea and syphilis this is accomplished through adequate treatment. For this reason the Department is deeply interested in the extent and quality of available service. To this end it furnishes arsenicals and mercurials without charge. In order that some check may be had on the competence of a given physician to administer these drugs, particularly those customarily given intravenously, they are distributed through the various venereal clinics. Here the doctor has an opportunity to familiarize himself with the technique.

The Department is constantly being asked where treatment can be obtained, particularly in the remoter parts of the State. It would be a great service were the local medical societies to appoint certain of their members to handle these cases. It has been done in other states and we should be glad to hear of such action in Massachusetts. In spite of a very successful campaign to persuade the druggists not to carry quack venereal remedies* it is not surprising that the demand continues in those communities where practically none of the doctors are prepared or willing to treat these cases. Many of the patients may not be able to pay, in which case the town or state should remunerate the doctor, depending on whether or not there is a settlement. In settled cases the responsibility for support falls on the local health authorities if the case is communicable, otherwise on the overseers of the poor.

In the larger communities the Department has been subsidizing clinics. During the last few months the work of these clinics has been closely scrutinized in order to continue the subsidy only where a reasonable return on the investment was obtained. The quality of service was found to run the whole gamut from the unbelievably poor to the excellent. As it was never intended that these subsidies should be continued indefinitely, and as they will probably be available only for a limited number of years more, every effort is being made to redistribute the funds as wisely as possible.

A sound interested physician is, of course, the corner stone of any good clinic. Some of the clinics average less than two visits per patient per year. Such service is worse than useless since it gives the patient a false sense of something effective having been done and, as the first visit is the most time consuming, it squanders the doctor's time without getting results. The most skillful physician in the world would be helpless to aid venereal cases averaging only two visits. This figure can be improved by adequate follow up, which is most effectively done at the first visit. The better the clinic is "sold" to the patient on the first contact, the less need there is to resort to form letters and the scandalously expensive method of home visiting. In addition adequate follow up brings in the husband or wife and children of the infected patient as well as the suspected source of infection. What can be done is well illustrated by the clinic at the Springfield Hospital. The only change in the staff or clinic's set up was the addition of an intelligent trained social worker who had no free time to give to the work outside of clinic hours. In less than six months the attendance had more than doubled.

In addition the Department is continuing its program of educating communities as to the seriousness of these diseases, and the need and availability of treatment. But such education is of necessity sporadic and impersonal in any given locality. The person who holds the key position as an educator is the private physician. A few words from him are worth more than tons of printed matter and miles of celluloid films. We should be heartened by the new day that has dawned in tuberculosis control and look forward to the time when gonorrhea and syphilis shall be lifted out of the morass of ignorance, bigotry and prejudice.

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*Kelley, E. R., and Pfeiffer, A.: Jour. A. M. A., Vol. 83, pp. 913-917, 1924.

Case Records
# of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY
RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 11351

MEDICAL DEPARTMENT

AN Italian housewife of forty-nine was admitted through the Emergency Ward June 15 in coma. An only fairly accurate history was obtained from her daughter. The chief complaint was jaundice. No history was obtained previous to the present illness except that the patient had always taken wine, but never to excess, and never had taken strong liquors. For seven years she had had general weakness and periods of nausea and persistent vomiting on occasions. She got along fairly well however by eating little or nothing. During the seven years she had taken almost nothing but liquids, as solid food seemed to cause marked nausea. She was occasionally troubled by gas. She complained rather frequently of abdominal pain, the location of which was not definitely known. It was believed to be for the most part above the umbilicus. Her family remembered one or two attacks of sharp pain which doubled her up. Aside from these the pain seemed rather mild. Six weeks before admission her sclerae were observed to be yellow, later her face. Still later the color spread all over her body and had persisted until admission. The abdominal pain had been less, however. She had eaten little or nothing. She had lost considerable weight in the past two years. The other chief complaints were weakness and anorexia.

Nine days before admission she went into coma for twenty-four hours, and twenty-four hours before admission went into a second coma which persisted until her arrival at the hospital. A physician prescribed morphia (?).

Examination showed a thin, rather deeply jaundiced woman in coma, breathing slowly. The skin and mucous membranes were cyanotic. The sclerae were icteric. The throat was difficult to examine. The tongue was dry. The lungs were normal. The heart showed no enlargement. The sounds were of fair quality. A systolic murmur was best heard at the pulmonic area. The pulmonic second sound was greater than the aortic second. The blood pressure was 85/55. The liver dullness extended from the fourth interspace. The edge was sharply felt 6 cm. below the costal margin. The liver felt irregular. There was bilateral Babinski. The pupils were contracted and did not react.

The temperature was 100.3° to 101.3° by rectum. The pulse was 108 to 110, the respiration 39 to 33. There is no record of the urine except that bile was present and sugar absent. The blood is not recorded.

The morning after admission the patient died.

DISCUSSION

BY DR. MAURICE FREMONT-SMITH

The present illness evidently began seven years ago with nausea and gas and attacks of abdominal pain. The nausea and lack of appetite, the fact that solid foods seem to cause nausea, make us think of carcinoma of the stomach. A sudden loss of appetite in a person over forty is to be considered seriously, as this is the characteristic beginning of carcinoma of the stomach. It is possible, however, for a patient with a large palpable carcinomatous mass in the abdomen and with considerable discomfort after eating to have the appetite remain good. This is extremely rare, however. Against carcinoma are the sex of the patient and the fact that seven years lapsed from the onset of symptoms before the terminal events. Excepting for the seven years lapse of time the jaundice, the enlarged rough liver and the coma would fit very well into a diagnosis of carcinoma with metastasis.

Gall-stones impacted in the common duct would explain the persistent jaundice and the enlarged liver, but not the mental condition. Cirrhosis of the liver comes on with symptoms similar to those described, but jaundice is late and ascites usually present when jaundice occurs.

Of course in any patient with jaundice and delirium or coma acute yellow atrophy must be considered, but the liver at this time should be small and not large. Carcinoma of the pancreas can go for long periods with most indefinite symptoms, the patient feeling weak, discouraged, "dyspeptic," without any single symptom or sign to hint the cause until persistent increasing jaundice without pain makes the diagnosis.

As to the neurological condition we are left rather in the dark. A meningitis accompanying a general septicemia might be thought of, but we have no evidence for or against meningeal irritation. We know nothing about the flexibility of the neck or the knee jerks. The bilateral Babinski is evidence of motor tract irritation. Were this cortical we must assume a diffuse meningitis or encephalitis. If this is caused by a lesion in the cord we should expect (and they may have been present) other signs—motor paralysis and sensory disturbance. A cord lesion would not explain the coma. No single cortical or pyramidal tract metastasis which I could conceive of above this cord would cause double Babinski.

Hemorrhage into the ventricles may produce sudden loss of consciousness with complete relaxation simulating coma from uremia, diabetes, alcoholism, opium poisoning or epilepsy (Osler). The onset of such coma is sudden. There may be no localizing symptoms whatsoever. Convulsions occur in many cases. This possibility is to be borne in mind, but would explain only half our picture. Why the jaundice and enlarged liver?

I can only guess at the diagnosis. I believe this woman died from carcinoma primary in the stomach, or possibly in the pancreas, with metastasis to the liver or the glands pressing on the common bile duct. I believe she has had metastasis to the brain and that a more careful neurologic examination might well discover localizing evidence the absence of which is the chief argument against this explanation of her coma. In addition to this, to explain her fever we may have to postulate infection of the gall bladder and liver, a mild cholangitis.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Probable malignant disease of the liver.
Cholemia.

DR. MAURICE FREMONT-SMITH'S DIAGNOSIS

Carcinoma primary in the stomach or possibly in the pancreas, with metastasis to the liver or the glands pressing on the common bile duct.
Metastasis to the brain.
Possibly a mild cholangitis.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

Cirrhosis of the liver.

2. *Secondary or terminal lesions*

Icterus.
Hypertrophy of the spleen.
Slight ascites.
Edema of the lungs.
Arteriosclerosis.
Arteriosclerotic degeneration of the kidneys.

3. *Historical landmarks*

Omental umbilical hernia.

DR. RICHARDSON: The head was not examined. The conjunctivae were saffron yellow.

The skin generally was saffron yellow. The muscles were flabby and pale. There was a small omental umbilical hernia. The cutaneous vessels along the sides of the anterior abdominal wall and the upper parts of the thighs presented as a rather prominent tracery.

The peritoneal cavity contained a small amount of thin bile stained fluid, slight ascites.

There were slight varices in the region of the lower third of the esophagus.

The mucosa of the stomach showed some reddening and there was some injection of the vessels.

The intestines on section were negative.

The mesenteric and retroperitoneal glands were negative. The anterior margin of the liver was at the costal border in the right mammillary line. The diaphragm was at the third interspace on the right, the fifth rib on the left.

In each pleural cavity there was a small amount of thin clear bile stained fluid. There were no pleural adhesions. The trachea and bronchi contained much thin bile-stained frothy fluid.

The lung tissue was spongy, bile stained, and yielded much thin bile stained frothy fluid.

The aorta showed a slight amount of fibrous sclerosis in the ascending thoracic portion, but the arch and descending thoracic and abdominal portions showed much fibrous sclerosis and many scattered smaller and larger fibrocalcareous areas. The great branches showed a slight amount of fibrous sclerosis.

The liver weighed 1770 grams. There were a few scattered vascular adhesions extending to the diaphragm. The capsule generally was slightly thickened, glassy, and rounded up over minute to small firm brownish-yellow nodules, giving a finely granular aspect to the surface. The tissue was tough, leathery, and the section surfaces showed closely set minute to small brownish yellow nodules on a grayish brown background, meshwork-like in places. The peritoneum in the region of the flanks was slightly thickened and markedly vascular. In a few other places the peritoneum presented a similar picture. The vessels of the broad ligaments showed some injection.

The gall-bladder, bile ducts, pancreas and duct of Wirsung were negative. The bladder contained an abundance of bile.

The spleen weighed 450 grams, considerably enlarged. The surface was smooth. The tissue was plump to a little soft and dark purplish-brown-red.

The kidneys combined weighed 180 grams, small. (Normally 200-400.) The capsules stripped, leaving bile stained surfaces showing a few scattered irregularities. The tissue showed some increase of consistence, was bile stained and rather wet. Beneath the irregularities on the surface there were small foci of atrophy with narrowing of the cortex. The cortex elsewhere was 5 mm. The pelves, ureters and bladder were negative. The mucosa of the bladder was bile stained.

A case then of cirrhosis of the liver with associated fatty metamorphosis and both icterus and ascites.

NOTE BY DR. FREMONT-SMITH

The necropsy findings are insufficient to explain the cause of death. Of course cirrhosis explains the enlarged liver, the jaundice and the indifferent gastric symptoms preceding for seven years. It explains these symptoms more satisfactorily than carcinoma. The slight temperature is likewise consistent with cirrhosis. On the other hand the mental symptoms, the bilateral Babinski, the contracted fixed pupils, do not fit into this picture.

Where a large proportion of the symptoms are central nervous system in origin and no examination of the central nervous system is made at necropsy the case is rather unsatisfactory from the point of view of the clinician, as only a partial answer to the problem is given. I am totally at a loss even now to explain the cause of death in this patient.

After making the above remarks the speaker turned to Osler and found the following paragraph:

"At any stage of cirrhosis the patient may have cerebral symptoms, either a noisy joyful delirium or stupor, coma or even convulsions. The condition is not infrequently mistaken for uremia. The nature of the toxic agent is not yet settled. Without jaundice and not attributable to cholemia, the symptom may come on in hospital when the patient has not had alcohol for weeks."

CASE 11352

South Medical Department

A young married woman came to the Out-Patient Department June 5 to find out if she had syphilis. She admitted repeated exposures, the last within a week, with a man known to have an infectious genital primary lesion. Her past history was negative. She had one child living and said to be well.

Her physical examination was entirely negative. A blood Wassermann was also negative. She was given neoarsphenamin 0.45 grams as a prophylactic, as it seemed impossible for her to escape infection.

June 12 she showed no signs or symptoms, and a second Wassermann was negative. She was thought to be probably pregnant, and was given 0.45 grams of neoarsphenamin.

June 24 she gave a history of "hives" following the eating of strawberries. Urticaria was not seen on examination, but was developed by slight irritation of the skin. The Wassermann was again negative.

June 26 a fourth dose of 0.45 grams of neoarsphenamin was given. July 19 there were no clinical signs and no evidence of pregnancy. A fifth dose of 0.45 grams of neoarsphenamin was given that day and a sixth on July 26. August 17 she was most carefully examined; nothing of a specific nature was found and the Wassermann was still negative.

September 26 she was feeling well except for rather severe but indefinite cramp-like pain in the region of the umbilicus. Her bowels were very constipated. She was given a prescription for cathartics and did not return to the clinic.

Discussion

BY DR. C. MORTON SMITH

NOTES ON THE HISTORY

This case is presented to illustrate the prophylactic use of arsphenamin. It was an interesting case. We had the clandestine partner with a primary lesion, and following our customary procedure as to donors or recipients asked the woman to come for examination. There had been many exposures, the last within a week. The man had a perfectly typical primary lesion, with abundant treponemata demonstrated by the dark field.

The woman showed no evidence whatsoever of syphilitic infection, recent or remote, and there were no enlarged glands. With the repeated exposures it seemed highly probable that infection had taken place and that she should receive the benefit of prophylactic arsphenamin. It was too late for any other preventive procedure. She had a negative blood Wassermann at that time. She was given 0.45 grams of neoarsphenamin, which was repeated at various times.

Soon after the invention of arsphenamin various patients asked if it would not be an advantage to take an immunizing injection; then if they continued their habits of exposure it would be perfectly safe. During the early years of arsphenamin both Dr. Post and I gave a few persons prophylactic injections when it seemed from the history that inoculation must have taken place. Of course it is very difficult to prove that a case will develop syphilis simply from the opportunities for acquisition, because numbers of people who have repeated exposures to infectious lesions for some reason or other fail to become inoculated.

A case in point that was impressive may be of interest here. A young woman came in October with a perfectly typical scaling secondary syphilide covering the trunk and extremities, with mucous lesions in the mouth and on the vulva. She was sent for treatment for psoriasis, for which she had been treated for about six weeks. She was married and living with her husband and a three-year-old son. There had been no extramarital exposure. She was a perfectly straightforward, respectable woman. From the history it was found that in the preceding February she had what was considered to be a peritonsillar abscess which lasted an unusual length of time for such a condition. It was several weeks before the swelling of the neck subsided, following which an eruption appeared on the body at the usual time after primary lesions. This eruption was first considered to be measles and later psoriasis. She and her husband lived as man and wife all the time, but neither he nor the child showed any evidence clinically or serologically of syphilis from start to finish, and they were checked up at intervals both by careful physical and serological examination for over two years. One could bring up a number of cases of this kind and prove that syphilis is not such a highly infectious disease after all, but of course there are cases where on slight exposure infection occurs.

The early use of arsphenamin as a prophylactic consisted of a single injection. There has been some experimental work done on animals within the last few years that pretty well disproves the prophylactic value of a single injection; for several years in these cases we have given a course of arsphenamin injections, practically the same dosage that would be given therapeutically, and in the case under discussion we followed it with a course of mercury. Since Miss Painter asked me to speak on this case we tried to find the patient so that a recent Wassermann report might be added, but she had moved and could not be located.

The first published report on prophylactic arsphenamin was, I think, in 1919, by Fournier and Guenot. They reported approximately a dozen cases were the donor was checked up by the dark field and the Wassermann reaction, as well as a careful physical examination and the method of *confrontation*. The latter was the method followed in practically all the work done years ago in determining the incubation period of syphilis, and is still of value in cases where a dark field is negative and before the time when the Wassermann becomes positive. A definite exposure to a known syphilitic, if that person shows the infectious lesions of syphilis, is fair presumptive evidence that inoculation has occurred. It is extremely difficult to prove a negative; and to repeat, not everyone exposed becomes infected.

The work on animals referred to in regard to the prophylactic use of arsphenamin is published in the Archives of Dermatology and Syphilology for October 1924.* In this experimental work the doses used were equivalent to the adult human dose, and in every case where a single dose either of neoarsphenamin or sulpharsphenamin was used a single injection did not prevent the development of syphilis, even given as early as three hours after inoculation. Three similar doses, however, given as late as twenty-four hours apart did prevent it in every instance, and the same was true whether neoarsphenamin or arsphenamin was used. They state with truth that it is of course not possible absolutely to reproduce in rabbits the conditions in human syphilis. They say: "But since a great deal of our data concerning human syphilis has been obtained by analogy to syphilis in animals, our findings on the one hand raise the question of the value of the single prophylactic dose in man, and on the other hand the question of biologic conditions in rabbits requiring much larger doses than the equivalent human doses to secure propylactic sterilization under the conditions specified." They also mention the condition that Brown and Pearce have noted, namely, the severer course of syphilis in experimental animals where the primary lesion is excised or destroyed early. If the primary lesion is excised within forty-eight hours of its appearance the subsequent course in the animal is much more severe. We were taught that syphilis was just as curable if allowed to develop to the second stage before instituting treatment. The reason is, presumably, that the destruction of the primary lesion robs the system of its source of antibodies or in some way upsets the development of resistance.

The following does not apply to this particular case, but one should not forget that in cases of trauma and the possible inoculation with syphilis Metchnikof's ointment applied immediately has a very high record of success in preventing infection. Practically all cases in which it was used within an hour failed to show signs of infection. Its use after five or six hours is probably of no particular value, and in such cases the use of prophylactic arsphenamin is to be considered, unless one is so situated that he would prefer the course of "watchful waiting" until the question of infection is definitely determined.

Miss Painter: Was it thought that this patient ever showed syphilitic symptoms or signs? What was the eruption?

Dr. Smith: She showed nothing syphilitic in any form. The eruption was "hives" (urticaria) following the eating of strawberries.

A Physician: What is Metchnikof's ointment?

Dr. Smith: Thirty-three and a third per cent. calomel ointment.

Dr. E. L. Young: I am wondering whether you would advise the use of that after needle-pricks from hospital patients who might have infection.

Dr. Smith: It would be playing safe.

Dr. Young: There is no question but that we do prick our fingers frequently with patients that may have, and I think in some cases later turn out to have syphilis. I never thought anything about it before. But I am wondering if you think it is of enough importance to justify the use of the ointment.

Dr. Smith: I doubt very much if a person with only a positive Wassermann and late syphilis would be dangerous. If it were an early case I should certainly use it. We always have it at hand.

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*An experimental study of the prophylaxis of syphilis. S. S. Greenbaum and M. J. Harkins, Arch. Derm. and Syph., Vol. X, p. 409, Oct., 1924.

Have you anything to say about these cases, Dr. Richardson?

Dr. Richardson: No, except that in a number of these cases where we find leutic aortitis, so far as we can find out there is no history of any initial lesion, absolutely. The patient would be glad to tell if he knew, and there seems to be no evidence whatsoever and no evidence anatomically in the body of any syphilis anywhere. Yet of course it must have gained entrance somewhere and fled to the aorta.

Dr. Smith: And probably located in the aorta very early in the course of infection—it is always an early secondary affection?

Dr. Richardson: It would seem so.

CASE 11353

Surgical Department

An Irish laborer of fifty-two entered January 24 for removal of a tumor on the inner side of the left knee. The knee was kicked by a horse thirteen years before, but had given no trouble until the past nine months. He gave a history of smallpox at nine, malarial fever at forty-five, and nycturia 1-2. One sister and two brothers died of consumption, another sister of acute Bright's disease. His mother died of cancer of the stomach.

Examination showed a slightly accentuated second sound and a systolic murmur at the apex. The venules of the face, hands and abdomen were dilated. The pupils were irregular and reacted to light very sluggishly. The tongue showed slight tremor. The tumor of the leg was an inch in diameter, circular in outline, and freely movable without dimpling of the skin. It was firm and not painful or tender.

January 25 operation was done. January 26 the patient was discharged.

At his return to the hospital April 10, three years later, no history of his health in the interval was obtained except that he had "rheumatism" in both shoulders two years before admission and that the January before his readmission he began to have continuous gnawing pain in the midepigastrium throughout the day, not radiating and without definite relation to meals, but occasionally somewhat worse after meals. It began almost any time and continued for hours, not relieved by food but somewhat alleviated by magnesia taken in hot water. It occasionally was less, but on the whole had been continuous for three months until two weeks before admission, when he stopped his work, which was shovelling sand and rocks, and the pain practically ceased. After the onset of the pain his appetite gradually grew worse until by the middle of February he hardly ever felt like eating. Since that time it had improved a little, and since he had stopped work it had become very good. Soon after the onset of the gnawing feeling in his stomach he began to vomit, usually two to four hours after meals, practically the entire meal. He had seen material from breakfast in the vomitus following supper. He had never seen blood. He usually vomited once or twice a day, often after every meal. His bowels had been fairly regular with an occasional catharsis. He had never noticed any bloody, tarry, or clay colored stools. During the three months he had dropped from his usual weight of 150 to 128. During the present illness up to the time he stopped work he raised a great amount of sputum. In February he noticed that his urine changed to a reddish tea color. He occasionally urinated once at night.

Examination showed a poorly nourished man with slightly injected sclerae. The chest was emphysematous, barrel shaped, with limited expansion. The heart showed no evidence of enlargement, though the supracardiac dullness and the right border of dullness could not be ascertained. There was a soft systolic murmur at the apex. The blood pressure was 135/70. The abdomen showed a questionable mass with an edge descending below the left costal margin on deep inspiration.

Before operation the temperature was 96.8° to 98.7°, the pulse 65 to 90, the respiration normal. The urine showed the slightest possible trace of albumin at one of two examinations, specific gravity 1.010 to 1.020, rare leucocytes. The amount was normal when recorded. The renal function was 35 per cent. The hemoglobin was 70 to 80 per cent., the leucocytes were 3,950 to 9,500, the polynuclears 61 per cent., the reds normal. A blood Wassermann was negative. The non-protein nitrogen was 39 mgm. The stools showed the slightest possible trace of guaiac at one of five examinations. Gastric analysis April 12 gave 130 c.c. of fasting contents showing 15 c.c. of free HCl, 27 c.c. of total acid. Guaiac was negative. Microscopic examination showed rare epithelial cells. Another analysis an hour after a test Ewald meal showed 150 c.c. of clear yellow material, free HCl 30 c.c. N/10 NaOH, total acid 42 c.c. N/10 NaOH. The icterus index was 10. X-ray showed both lung fields clear. The aorta was tortuous and prominent in the region of the knob. The bones of the chest showed no evidence of disease. A plate of the urinary tract showed the kidney outlines not visible on either side, although the left side was considerably more dense than the right and there was a shadow present which might be interpreted as a very large kidney. There were no evidences of stone. The spine and the sacro-iliac joint showed proliferative changes. The stomach was very low and atonic. Peristalsis was sluggish. There was retention of about one-third of the motor meal at the end of six hours.

In the lower third of the stomach just below the angle and on the lesser curvature was a rounded shadow of increased density which persisted at both observations and was quite suggestive of barium within the ulcerating lesion at this point. No definite masses could be palpated. There was no marked tenderness over this region. This deformity was visible on all films. The first portion of the duodenum appeared normal in contour. The six hour meal had reached the terminal ileum. In considering the differential diagnosis one medical consultant placed weight upon the absence of cachexia and anemia, the presence of HCl and the improvement with rest. Another medical consultant drew attention to the history on one hand and the duration on the other. A surgical consultant advised operation in view of the patient's age and the uncertainty of the exact pathology.

April 22 operation was done. The patient was in excellent condition after it considering how long and hard it was. By April 25 the temperature was flat and he was quite comfortable. The following day he had a sudden rise in temperature, subsiding the 27th. There was some cough with purulent sputum and questionable signs at the right base. He had hiccup. April 28 the temperature was down and he seemed better. That night however he vomited four ounces of light brown fluid showing a very strongly positive guaiac. He did not however seem at that time to be in bad condition. When seen next morning he was almost *in extremis,* irrational, with rapid respiration and cyanosis. The abdomen was soft and the wound clean. The temperature rose to 107.8°, the pulse to 135, the respiration to 39. That morning he died.

DISCUSSION

BY DR. EDWARD L. YOUNG, JR.

Whether this tumor was a lipoma or a fibroma or a wen is hardly fair to say on the description, although a wen is connected with the skin, a lipoma generally dimples the skin, and a fibroma likewise, as a rule, is connected with the skin. In any event I do not see how it could be anything other than some simple tumor, as it makes no mention of its connection with the knee. A lipoma is the most common simple tumor in this position.

DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Lipoma.

PRE-OPERATIVE DIAGNOSIS, FIRST ENTRY

Lipoma.

OPERATION

Local novocain. The tumor was dissected out with blunt dissection. It was found to have the saphenous vein running through it. The vein was clamped and cut on both sides and the tumor removed.

PATHOLOGICAL REPORT

A spherical encapsulated tumor about the size of an English walnut. On section it shows a yellowish-red homogeneous surface.

Microscopic examination shows the central portion of the tumor composed of granular structureless material. It has a capsule of connective tissue with an inner zone of calcareous degeneration. There is no evidence of an epithelial lining.

Chronic inflammation.

FURTHER DISCUSSION

The vomiting of the breakfast meal after supper is our first bit of evidence which is of definite value, in that it tells us that there is pyloric obstruction. The next thing is a loss of twenty-two pounds of weight. With these two things the story is suggestive of malignancy of the stomach. That is to say it does not have the duration which at fifty-two the usual ulcer case has. It does not have the characteristic symptoms of relation to meals, relief by food or alkali that is generally connected with ulcer. I do not see that we can go any farther without either X-ray or operation.

The hemoglobin is a little low, but not more than we should expect with his general condition. The non-protein nitrogen is at the upper limit of normal. The gastric analysis shows less stasis than we should expect if his story of the character of the vomitus is true. The X-ray which we have asked for does show some pyloric obstruction and it shows an abnormality in the pyloric end of the stomach which might of course be either cancer or ulcer, but it seems to me that the short history plus the lesion is more in favor of cancer than ulcer. It seems to me that at his age, in the face of a condition on the gastric side of the pylorus, in other words where it might well be malignant, there is nothing to do but operation in the hope that if it is malignant it is still in the curable stage.

X-RAY INTERPRETATION

The barium examination suggests an ulcerating lesion in the lesser curvature of the stomach

DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Cancer of the stomach.

PRE-OPERATIVE DIAGNOSIS, SECOND ENTRY

Ulcer of the stomach, malignant or peptic.

OPERATION

Gas-ether. Exploration of the upper abdomen through an upper right rectus muscle splitting incision revealed an enlarged stomach on the lesser curvature of which was a thickened area which marked the site of an ulcer about the size of a five-cent piece. The stomach was not adherent posteriorly and there was no evidence of mechanical pyloric obstruction. The ulcer was removed, together with a section of the stomach including a strip of antrum about four inches wide. Both the duodenal and gastric ends were then sutured and a union of the intestines established by a posterior gastro-enterostomy.

PATHOLOGICAL REPORT

A cuff-shaped piece of stomach about 4 cm. wide. There is a shallow ulcer on the lesser curvature 1.2 cm. in diameter with sharply marked margins.

Microscopic examination shows the base of the ulcer composed of cell-rich fibrous tissue which extends through all the coats. There is no atypicality of the epithelium at its margins.

Chronic ulcer.

FURTHER DISCUSSION

The condition which they find at operation is interesting in that it does show that obstruction does not have to be present at all times, but that it is, when present, due to the spasm from the irritation. The pathologist tells us that there is actually no malignancy present.

The story following this is of a sudden emergency which points toward a pulmonary embolism. It is true however that a pneumonia can come on as rapidly and show as severe symptoms as this.

A case such as this demands all the experience and judgment which can possibly be required by any surgical condition, because even in the hands of a skilled surgeon the mortality of resection is greater than the mortality of a simple gastro-enterostomy. On the other hand there is a possibility that with this location the condition may become malignant even if it is not so now, so that each case must be judged on its merits, following a careful study and following the condition as found at operation. It is certainly not a case for the inexperienced operator.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Ulcer of the stomach.
Bronchopneumonia?
Operation, Billroth's II.

DR. EDWARD L. YOUNG'S DIAGNOSIS

Ulcer of the stomach.
Pulmonary embolism?

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

(Chronic ulcer of the stomach.)
Phlegmonous gastritis, streptococcus.

2. *Secondary or terminal lesions*

General peritonitis.
Purulent pleuritis.
Edema of the lungs.
Soft hyperplastic spleen.

3. *Historical landmarks*

Operation wound for ulcer of the stomach.
Slight chronic pleuritis, right.

Dr. Richardson: The head was not examined.

The peritoneal cavity showed well marked general peritonitis. A gastro-enterostomy was established by the posterior route between the jejunum a short distance from the lower end of the duodenum and the remaining portion of the stomach.

The lower end of the stomach including the pylorus was wanting. The remaining portion of the stomach was sutured across at its lower end. The walls of the stomach generally were greatly thickened, up to 2 cm., and on pressure pus in great amount oozed from the stomach wall. The pus rested mainly in the submucosal and muscular coats. The mucosa was slightly thickened, reddened, but intact. In the region of its upper end the duodenum was sutured off. Cover glass from the pus in the wall of the stomach showed leucocytes and streptococci. The intestines below the anastomosis were negative.

There was a small amount of purulent fluid in each pleural cavity. The pleura on each side was coated with exudate. The lung tissue showed considerable edema.

Heart. The myocardium, valves and cavities were negative. The aorta and great branches showed a slight to moderate amount of arteriosclerosis.

The spleen weighed 370 grams, moderately enlarged. The tissue was soft and mushy.

A typical case then of phlegmonous gastritis, streptococcus infection, and as far as our material goes very rare.

"I AM VACCINATED" BUTTONS TO BE ISSUED IN THE CAMPAIGN AGAINST SMALLPOX IN NEW YORK CITY

Vaccinated school children to get buttons proclaiming protection from smallpox.

Buttons for vaccinations are the newest method of the Health Department to encourage preventive work against smallpox in an intensive campaign which will be begun soon in the middle west side section of the city, east of Park Avenue and between Fourteenth and Sixty-fifth Streets. The campaign will be directed chiefly at the million and a half school children in this section and factory workers.

Health Commissioner Frank J. Monaghan said that he believed that the buttons would help enlist the aid of school children.

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THE VENEREAL DISEASES

We know the etiological agents of the venereal diseases, we know definitely the modes of spread, and for one, at least, we have specific therapy. There are definite laboratory aids to diagnoses which are generally available. If we had such an array of weapons against poliomyelitis, encephalitis lethargica and influenza we would feel well on the high road to their control. But with all these resources against the venereal diseases it is doubtful whether more than the first step has been made towards their control. This is because the common mode of spread involves social and moral elements which are present in no other of the common communicable diseases, and with these elements come the hosts of ignorance, bigotry, fanaticism, prejudice, misinformation and false modesty!

One of the pioneers of preventive medicine in this country has recently said that the present status of venereal disease control is in many ways not unlike the status of tuberculosis control a generation ago. When it was first suggested that tuberculosis should be reported doctors generally threw up their hands. To call a case "consumption" was equivalent to handing a patient a death warrant. Real estate would be affected; no one would live in a house once occupied by a "consumptive"; members of the family would be unable to procure insurance; the children would be excluded from the schools and shunned on the streets; the whole social structure would be undermined. But, during the past generation we have seen a complete change in the attitude of the public. Tuberculosis is now a hopeful rather than a hopeless disease.

The most remarkable public health phenomenon of our day is that where fifteen years ago the cry was "Build tuberculosis beds, build, build, you can never catch up with the demand!" today there is indication that in states such as Massachusetts there are ample bed facilities for this disease and we hear of tuberculosis societies broadening their program to include chronic heart disease, health examinations and general public health work. What methods accomplished this metamorphosis? Education of the profession, early diagnosis, education of the patient to prevent the spread of the disease, follow up work which kept the patient under observation and treatment for years, clinic and hospital facilities, examination of contacts and sources of infection, education of the public to a sane attitude toward tuberculosis as well as to the precepts of personal hygiene.

It is just these methods that will prevail in venereal disease control. Education of the profession to the importance of early diagnosis and report in order that the size of the problem may be estimated and progress measured, education of the patient and intensive therapy to reduce infection, follow up which will keep the patient under observation and treatment for as long as may be indicated, clinic and hospital facilities, examination of contacts and sources of infection and education of the public to a sane attitude toward these diseases as well as to the precepts of personal hygiene. Practically a duplicate of the methods which we have seen accomplish results in tuberculosis. Granted that the problem with the venereal diseases is more difficult because of the degree to which the social and moral structure of society is involved, it is a difference of degree rather than of kind. This added difficulty for the control of syphilis, at least, should be in part offset by the specific therapy. What an impetus the treatment of tuberculosis would get should the long sought drug comparable to salvarsan be discovered. Thus the showing in tuberculosis is an encouragement and gives an index of the results we may expect from a similar program for venereal disease control intelligently and persistently supported by individual and community effort.

A SUGGESTION FOR STATE MEDICINE

At a recent conference of health commissioners of New York Dr. Allen W. Freeman presented his prophecy of State Medicine. Dr.

Freeman was formerly director of the Ohio State Department of Health and now is a member of the faculty of the Johns Hopkins School of Public Health. Dr. Freeman claims that in rural areas medical health service will be administered largely through the county hospital which will have a whole time staff with outpatient clinics. He believes that the seriously sick and maternity cases will be cared for so far as practicable in the county hospitals where all the modern methods of investigation and treatment can be applied. The nursing staff will be large enough to supply public health and visiting nurses throughout the areas covered by such hospitals, and private practitioners who will be responsible for the health problems of their patients will be under supervision. That part of the expense not met by fees paid by patients will be supplied by state and local funds. His argument is apparently based on the alleged economic advantages of this plan and is endorsed in many of its features by Dr. George E. Vincent of the Rockefeller Foundation.

We are well aware of the ambition of many persons to drive the private practitioner from his long-established field and expect to hear ideas of this sort put forward from time to time. Of course it is a general understanding that in every field of human effort efficiency will win out against indifferent service but we predict that it will be a long time before the plan outlined above will be generally adopted. Many of these theorists base their claims on the alleged comparatively low-grade or insufficient medical service found in some communities, but conditions are changing rapidly. The average young doctor is a better equipped man than his predecessor and time will gradually operate to relieve the world of those who were imperfectly educated and hence unprogressive, so that medical service will be on a higher plane and there will be less ground for criticism.

That medicine is changing to become more largely a practice of prevention is perfectly evident but that does not mean that people will journey to state or county hospitals any more than they do now in places where there are reputable practitioners, but rather that the individual doctor will be the health adviser as well as the attendant in illness and he ought to be the one to advise the patient of his needs. The plan presented by Dr. Freeman has some merit and will be useful in some areas but we suggest caution in attempts to put the scheme into operation on a large scale.

It is a serious condition when the state and nation takes upon itself the long-established prerogatives of the individual unless the individual fails to meet the requirements of society. We can understand the necessity of state or county hospitals in communities too poor or otherwise unable to provide them but we believe that the creation of hospitals should be determined by definite indications rather than general principles.

We are constantly reminded of the unrest in the minds of physicians when hospitals compete with private practice on terms which cannot be met by the individual doctor and the question of the creation of state hospital service is pertinent and will be so under our system of government. The fundamental principle inherent in the custom of state or national hospitals is to provide for the dependents of the state or nation and so far as this form of public service enters the competitive field questions may be raised with propriety. Incorporated hospitals well endowed with facilities for research and teaching must always be encouraged, but too much enthusiasm in developing routine practice in hospitals which is not valuable for research or instruction and which deprives the practitioner of his daily bread is to be condemned. Even men on the staffs of some of our largest hospitals deplore the ambition of large competitive services.

It seems to many that the justification for the creation of a hospital, aside from a definite unmet demand on the part of the sick, lies in the possibility of uniting charitably disposed persons in a scheme which when completed becomes a medical educational centre. This is illustrated by the many small community hospitals where as a result of the presence of such an institution both the doctors and the people learn a great deal about the problems of disease and become coöperative in preventive as well as curative medicine. These institutions less often interfere with private practice and in some instances encourage more ready reliance on the family doctor. Since there will always be differences of opinion concerning medical politics, every physician can ponder on the problems involved and be ready to help in their solution.

CANCER RESEARCH

In view of the publicity given to Gye's recent work[1] in "cancer" research it seems as if the medical profession should be informed in a general way as to gist of his findings and should be warned against hasty and unwarranted conclusions.

From his work Gye concludes that two substances are necessary for the production of malignant tumors:—(1) a thermolabile specific chemical substance and (2) a living non-specific virus. The first may be obtained either by using the supernatant fluid after centrifuging at high speed an emulsion of tumor or by treating a tumor emulsion with chloroform. The second may be obtained either from the sediment after centrifuging as above or by cultivating a bit of tumor tissue in what is really a modified tissue culture. Neither by itself will cause tumor formation ***within certain quantitative limits.***

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[1] Gye, W. E., Lancet, 1925, II, 109.

As the second factor, the virus, is non-specific, it may be obtained from any malignant tumor and when combined with the specific substance should result in the formation of a tumor of the sort from which the first or specific factor was obtained. Thus a combination of virus from either chicken sarcoma, mouse sarcoma or human carcinoma (one instance) and specific substance from a chicken sarcoma resulted on injection into a chicken in the formation a chicken sarcoma. In double the doses used in the combination either of the factors alone is *usually* inocuous.

To date Gye has been able to obtain his specific chemical substance only from emulsions of Rous' chicken sarcoma and consequently all of the tumors which he has been able to cause have been only of this particular kind. This fact alone should prevent one from accepting his theory without many qualifications for it is well known that this particular strain of chicken sarcoma differs in many ways from the ordinary malignant tumor. Chief among these is the fact that when an emulsion of the tumor is filtered through an unglazed porcelain candle the filtrate still retains the power of causing chicken sarcoma. Our conception has been that this particular tumor was brought about by a peculiar virus or "agent" (Rous) which could be passed through a Berkefeld filter. No one has ever been able to do this with emulsions of mammalian tumors with the exception of Gye who claims to have been able to cause mouse sarcomas on injecting filtrates from so-called "cultures" of one strain of mouse sarcoma.

Furthermore the work is sadly lacking in control experiments. For instance, no mention is made of the effect of normal tissue extracts and normal tissue cultures as compared with his "non-specific viruses" obtained from various tumors.

Gye's work is most important and interesting from the point of view of fundamental knowledge of malignant tumors. However, we feel that his findings to date furnish us with additional knowledge concerning the biology of merely one very unusual tumor type, that these findings do not warrant a theory applicable to tumors in general and that there is no immediate expectation of that millennium, "cancer cure."

EDUCATION OF THE LAITY

The Lay Educational Bureau of the Illinois Medical Society is again soliciting funds for the purpose of maintaining the campaign previously inaugurated. The physicians of Illinois have again contributed generously to the appeal. Over one hundred and fifty of the Chicago doctors and about an equal number from the down-state sections have responded. Illinois is carrying the fight for better support for scientific medicine directly to the people.

The State Society conducted a defensive campaign against the proposed chiropractic bill and although this bill was supported by the Speaker of the House, the Republican Floor Leader and another influential member of the House, the bill was defeated.

The League for Medical Freedom succeeded in getting support for a bill designed to prevent Health Authorities from entering the house of a person suffering with a contagious disease without first getting a court order, but the Governor vetoed it.

These reports of active efforts to legalize the cults and hamper health authorities are illustrations of the dangers now before the people of this country.

THIS WEEK'S ISSUE

Contains articles dealing with venereal diseases and is an effort to coöperate with the State Department of Public Health in meeting the Venereal Disease Problem which is engaging the attention of sanitarians and the medical profession.

Perry, Henry J., M.D., Harvard, writes on "The Management and Control of Venereal Diseases." He is Associate Professor of Dermatology in Tufts Medical School and Chief of the Department of Dermatology and Syphilology at the Boston Dispensary.

Smith, C. Morton, A.B., M.D., Harvard, writes on "The Treatment of Syphilis." He is Clinical Professor of Syphilis, Harvard Medical School and Chief in the Department of Syphilis in the Massachusetts General Hospital.

Smith, William D., M.D., A.B., Harvard, Physician to Out-Patient Department, Mass. General Hospital, Instructor in Medicine, Harvard Medical School and Visiting Physician, Good Samaritan Hospital, deals with "Visceral Syphilis as Found in the Heart, Aorta, Liver and Lungs."

Solomon, H. C., B. S., University of California; M.D., Harvard, treats of "Neuro-Syphilis." He is Associate in Psychiatry and Instructor in Neuro-pathology, Harvard Medical School; Chief in Therapeutic Research, Boston Psychopathic Hospital and Assistant in O. P. Department, Massachusetts General Hospital.

DeNormandie, R. L., A.B., M.D., Harvard, is Instructor in Obstetrics, Harvard Medical School and Assistant Visiting Physician, Boston Lying-In Hospital. He writes under the title "Syphilis and Pregnancy—Prenatal Care."

Sylvester, P. H., A.B., M.D., Harvard, is Instructor in Pediatrics, Harvard Medical School and Assistant Visiting Physician to the Children's Hospital. His subject is "Syphilis in Infants (Congenital Syphilis)."

Carvill, Maud, B.A., M.D., Tufts, and **Derby, George S.**, A.B., M.D., Harvard, write on "Interstitial Keratitis." Dr. Carvill is the Ophthalmologist of the New England Hospital for Women and Children, Clinical Assistant, Massachusetts Eye and Ear Infirmary and Instructor in Ophthalmology at Tufts Medical School. Dr. Derby is Professor of Ophthalmology at the Harvard Medical School. He is a member of National and State Ophthalmological Societies.

Smith, George G., A.B., M.D., Harvard, presents the subject of "Gonorrhoea in the Male." He is Associate Urologist, Massachusetts General Hospital; Surgeon, Collis P. Huntington Hospital and Secretary of the Section of Urology, A. M. A.

Pemberton, Frank, S.B., M.D., Harvard, writes on "Gonorrhoea in the Female." He is Assistant Visiting Surgeon, Free Hospital for Women; Instructor in Gynecology, Harvard Medical School and a member of the American and New England Urological Associations.

Kelley, Eugene R., A. B., D. Sc., Bowdoin, M.D., Johns Hopkins, and **Bigelow, George H.**, Doctor of Public Health and M.D., Harvard, present the "Control of Venereal Disease from the Health Department Standpoint." Dr. Kelley is Commissioner of Public Health, Commonwealth of Massachusetts and Dr. Bigelow is Director of the Department of Communicable Diseases in the Massachusetts Department of Public Health.

The Massachusetts Medical Society

MEMBERSHIP CHANGES

Dr. Marie S. Lindsay has moved from the Boston State Hospital, Dorchester (Norfolk) to the Connecticut Reformatory, Cheshire, Connecticut (Non-Resident List).

Dr. Florence F. Rice has moved from Brookline (Norfolk) to Medford (Middlesex South), where her address is 14 Pearl Street.

Dr. Roger G. Osterheld has removed from Westborough (Worcester) to Concord, N. H. (Non-Resident List). His address is "State Hospital."

Dr. Julian G. Ely has moved from New Bedford (Bristol South) to New London, Conn. (Non-Resident List), where he is at 43 Granite Street.

MISCELLANY

THE PNEUMONIA DEATH RATE IN MASSACHUSETTS

In an article by Eugene R. Kelley, M.D., Commissioner of Health for Massachusetts, published in the United States Public Health Reports August 7, 1925, the conclusion is reached "that the figures since 1918 are significant and that the death rate for pneumonia in Massachusetts is really decreasing. As a possible explanation of a decrease in the pneumonia death rate was the changing of classification of the causes of death, we call attention to the fact that the decrease in the pneumonia death rate was not coincident with an increase in the death rate of any of the chief causes of death."

THE DORMITORY OF THE HARVARD MEDICAL SCHOOL

Announcement is made at Harvard University of an additional gift of $575,000 by Harold S. Vanderbilt, Harvard '07, of New York City, to complete the fund for the dormitory of the Harvard Medical School.

Last April Mr. Vanderbilt gave $125,000 for a gymnasium for the Dormitory. The inclusion of the gymnasium in the Dormitory marks a precedent in medical education. It is part of the general movement for the prevention rather than the cure of disease. It is the wish of Mr. Vanderbilt that the gymnasium be used in connection with courses in the Medical School.

It is estimated, according to preliminary plans, that the land and the building, to house 250 students and the gymnasium, will cost a little more than $1,300,000. Nearly 1500 doctors have subscribed to the fund a total of more than $110,000. About 600 other donors have given over $200,000 and Mr. Vanderbilt's two gifts aggregate $700,000. Harvard University has agreed to contribute the sum of approximately $300,000 as an investment.

The campaign for the Dormitory fund was started in September 1923. The support of the doctors was most inspiring, not only in their individual gifts but also in the large number of gifts they secured from others. Mr. Vanderbilt's gift of the gymnasium and his final gift to complete the fund, are, however, by far the largest part of the fund and constitute the most generous recognition of the wisdom of the project and a most valuable aid to the Medical School.

The site of the Dormitory is to be opposite the entrance to the Medical School at the corner of the Avenue Louis Pasteur and Longwood Avenue. The plans drawn by Coolidge, Shepley, Bulfinch and Abbott, architects, of Boston, provide for a building to house 250 students and leave space for a future addition to house 150 students.

The raising of the fund has been in charge of a committee of which Dr. Elliott P. Joslin, Harvard M. D. '95, is chairman and Dr. Francis M. Rackemann, Harvard, '09, general secretary.

"HEALTH AUDIT"—AID TO LONGER LIFE

BY CHARLES H. MAYO, M.D., ROCHESTER, MINN.,

Member Gorgas Memorial Institute

In the past twenty-five years more has been accomplished in medicine than in all the centuries before. Scientific medicine has done about all it can for the mass diseases, now practically gone, but which used to frighten and destroy the people by tens of thousands.

In the fourteenth century fifty million people died of the plague. There was only one way of escaping it, and that was for people to leave their homes and run away to places free from it.

In the eighteenth century many millions, probably one hundred millions, died of nothing but smallpox.

Today each man is dying his individual death, and it is up to us to see if we cannot reach him in some manner and persuade him that it is worth while, when he is still vigorous, to learn to keep his machinery from going to pieces from neglect.

In the sixteenth century, man had but twenty years of average life. It is fifty-eight today, and you wonder whether you will be able to reach the three score and ten of the Bible. We hope to be able to do that from a medical standpoint within the next twenty-five or forty years.

It is coming. We know it is coming. Our problem is advancing the age of our people by teaching men, women and children the art of keeping well. There are thousands of deaths annually, which, with reasonable precaution, could be prevented. This means that society is not availing itself of the medical knowledge already at its disposal. Of the 3,000,000 people on the nation's sick list every day, one-fourth to one-third are needlesssly so.

To combat this unnecessary suffering and waste of human resources, to induce better health and longer lives, a campaign of health education such as is now being undertaken by the Gorgas Memorial Institute is of the highest value.

An important phase of the work is the periodic health examination or health audit, the only known way of discovering certain incipient diseases before the individual realizes anything is wrong. In the beginning, Bright's disease, apoplexy, and high blood pressure are usually symptomless to their victim. But discovered in time by the health audit, the advice of the family doctor followed out, you are put on the road to recovery before your vital organs are wrecked beyond repair. Take as good care of your health as you would of your automobile and have your vital structures tested yearly to locate the enemy of your health.

A second vital function, which is truly preventive medicine, is teaching the individual the ill effects of wrong habits of living, which if continued, will lead to illness. Improper eating, and getting insufficient exercise each day are among them.

CRITICISM OF THE NEW YORK CAMPAIGN AGAINST SMALLPOX

THE Chairman of the Executive Committee of The Civil Reform Association has publicly criticised Health Commissioner Monaghan's plans for combatting smallpox. It is claimed that the cries of emergency had been made in order to keep certain political favorites in paying positions and that the health authorities have been making appointments under the emergency provisions ever since 1920 when Senator Copeland, then the Head of the Department, appointed two hundred persons for the purpose of stamping out smallpox, plague, cholera and other like diseases. It is claimed that the contentions of the Civil Reform Association were upheld by the Appellate Division of the Supreme Court in an opinion rendered last March.

In order to circumvent the restraining order it is claimed that the number of laboratory helpers was increased.

Commissioner Monaghan in a reply to the charges states, as quoted in the *New York Times:* "Everything has been done in accordance with the Civil Service law. And I would like to add that our campaign against smallpox has resulted already in the vaccination of over 100,000 persons and that as soon as the vacationists return to the city we shall vaccinate probably many more than that number."

Criticisms of this nature may or may not be logical. We are not in a position to interpret the intricacies of politics in New York and cannot endorse or refute charges of political maneuvering, but we do know that New York is practically without smallpox and some persons or some measures have succeeded in bringing this about.

ALCOHOL AND INSANITY

JAMES MALCOLM, in an article in the *New York Times,* reports that statistics gathered from forty-seven of the States of the Union by the Federal Census Bureau, based on data from five hundred and twenty-six institutions with about two hundred and eighty thousand patients, prove that over a period of twelve years up to 1922 alcohol plays a less prominent part in causing insanity than formerly.

The figures are as follows:

PERCENTAGE OF ALCOHOLIC PATIENTS IN HOSPITALS FOR THE INSANE IN FORTY-SEVEN STATES IN 1922 AND 1910

Division	1922	1910
New England States	5.7	12.9
Middle Atlantic States	3.7	11.0
East North Central States	4.8	10.0
West North Central States	2.9	7.8
South Atlantic States	1.9	8.0
East South Central States	1.4	7.3
West South Central States	2.2	8.1
Mountain States	4.6	13.9
Pacific States	4.8	12.7

In the Southern States, seventeen in all, the greatest reduction in alcoholic cases occurred between 1910 and 1922. In the remainder of the States, including New England, Middle, Northern and Far Western States, the percentage of reduction, while considerable, is not so great as in the South.

THE STATES COMPARED

Among the individual States in Arizona, Alabama and Oklahoma lead in the general reduction of alcoholic admission in the twelve-year period. There was likewise a big slump in Vermont, Delaware, West Virginia and the District of Columbia, and a considerable lowering in New York, New Jersey, Minnesota, Washington and Oregon.

The four States with the greatest percentage of alcoholic cases in 1910 were Delaware, 21.3; Colorado, 20.8; New Jersey, 19.7, and Oklahoma, 18.7. The States with the highest percentage twelve years later were New Mexico, 8.8; New Hampshire, 8.0; Rhode Island, 7.2, and Colorado, 7.5.

Dr. Horatio M. Pollock, statistician of the New York State Hospital Commission, finds that while alcoholic cases in insane institutions throughout the country have decreased more than one-half since 1910, mental disease from other causes continues to increase in proportion to population.

SHUTTING OUT SMALLPOX

Boston business men have responded very well to the appeal to prevent the appearance of smallpox in this city. 194 firms have replied to the letter which the Committee on Public Health and Sanitation sent out. 181 of these promised coöperation.

The Chamber has sent out 45,000 pay envelope inserts and 1,800 posters. The appeal has been broadcast throughout a very large portion of the community. The task which remains is to reach those who have not yet seen the warnings, and to encourage vaccination. Some firms are taking very constructive steps toward securing vaccination of their employees. The following letter is an example of this:

"Since receiving your letter, we called in our store doctor to give a talk on safeguards against smallpox. In addition, we had a demonstration vaccination of one of our store members and are arranging for vaccination of our entire force if possible, through either their own physicians or our health department."

The Civic Bureau of the Chamber will gladly fill any orders free of charge for pay envelope inserts, bulletin board posters or house organ suggestions.

The Checker Taxi Company has arranged for the vaccination of its 500 drivers by the Reconstruction Clinic.—*Current Affairs in New England.*

SUGGESTS AIRPLANE TO FIGHT MOSQUITOS

The suggestion that the mosquito pests in the city had their breeding places in the suburbs which could be swept by planes was made yesterday, when C. G. Peterson of the Wright Aeronautical Corporation of Paterson, N. J., reported successful experiments with planes in Louisiana.

"I have noted," he said, "several editorials and news articles in the last few days in the New York papers on the recent increase of mosquitos in New York City and the whole metropolitan area. In this morning's mail we have received a letter from one of our field service engineers who is now in the South on cotton boll-weevil dusting with airplanes.

"He writes that he has been in touch with Dr. W. V. King of the United States Department of Agriculture experimental station at Tallulah, La., where they have been doing considerable experimental work on fighting mosquitos from airplanes. The general method is to fly over the swamps and breeding places, distributing a cloud of dust from the plane which is poisonous to mosquitos but harmless to humans and animals."—*New York Times.*

SCREW IN LUNGS FORTY YEARS

Philadelphia, Aug. 23 (A. P.)—Mrs. Ida Ferguson of Canton, Mass., has recovered from a bronchoscopic operation at the Jefferson Hospital here, where a small screw that had been lodged in her lungs for more than forty years was removed.

Mrs. Ferguson accidentally swallowed the screw when a child.

At the hospital last night it was said that Mrs. Ferguson's operation broke all records for the length of time foreign objects had remained in undesired "captivity" prior to their removal by the bronchoscope. Until now the record was held by a man in whose lungs a tack was imbedded for thirty-six years.—*New York Times.*

GERMAN PHYSICIAN SAYS WE LEAD IN MEDICINE

Germany has slipped to second place, in the opinion of Dr. M. Schneider, a surgeon of Berlin and traveling in this country at present to inspect hospitals and surgical schools. In an interview at the Hotel Pennsylvania, where Dr. Schneider is staying, he said:

"Medical science has progressed more in the United States than in Germany since the war. Before the war a student could not get a diploma in surgery without years of study. Now it is a question of money. If a student has money, he passes.

"Before the war, for a man to become a surgeon he had to be a physician for five years, of which two had to be spent in a hospital. With this record he could get the authority to practice. A doctorship in surgery requires twenty-five years' practice as a physician and surgeon.

"The present system is still warlike. There are so many physicians that they cannot make a living. Many newspaper men and clerks are graduate physicians, but cannot get a chance to practice. The smaller cities are overcrowded and to set up in the larger ones requires a great deal of money. It costs about 10,000 marks ($2,500) to buy a practice in Berlin, which must be done before a man would think of starting. He could not build up one of his own because the competition is too keen. Living space is scarce and many families of four and five are living in one room. There are what we call 'lauben' colonies, persons who have banded together to live in community houses built of box cars.

"I am traveling about the world studying cancer and tumorous diseases. I find America foremost, and I have gotten the best information on the subject here."—*New York Times.*

RECENT DEATHS

POMEROY—Dr. Ralph H. Pomeroy, Brooklyn gynecologist, died in that city, August 22, 1925, at the age of 58. He had been ill with pleurisy for five weeks. Dr. Pomeroy was a former president of the Kings County Medical Society and of the New York Obstetrical Society.

He was born in Manhattan and was graduated from the Polytechnic Preparatory School, Wesleyan University and the Long Island College Hospital in 1889. He was attending gynecologist and obstetrician at the Brooklyn Hospital and consultant at the Kings County Hospital, St. John's Hospital and the Methodist Episcopal Hospital. Dr. Pomeroy was a member of the American Medical Association, the American Gynecological Society, the Kings County Medical Society and the New York Obstetrical Society. He was also a fellow of the American College of Surgeons.

Dr. Pomeroy left a widow and a daughter, Mrs. Earl Bingham Harris.

REILLY—Dr. James Philip Reilly, founder of the Elizabeth Hospital, Elizabeth, N. J., died of pernicious anemia in the hospital which he had helped to start, on August 15, 1925, aged 65. He was a graduate of the Bellevue Hospital Medical College, N. Y., in 1888 and practised first in Wisconsin, studying then in Germany. Besides being the founder of and surgeon to Elizabeth Hospital he was a member of its Board of Governors, president of Elizabeth Library Board, and a former president of the Board of Education.

Dr. Reilly is survived by his widow, one son and four daughters.

CORRESPONDENCE

LONDON LETTER

(*From Our London Correspondent*)

London, July 25, 1925.

CANCER INVESTIGATIONS

Views as to the cancer researches by Dr. W. E. Gye and Mr. J. E. Barnard, the results of which have been published recently, vary considerably. The general opinion prevails that judgment should be suspended until more details are known, and in the meantime most of the authorities on cancer maintain an attitude of reserve.

EFFECT OF LIGHT ON HEALTH

Among the interesting papers read before the meeting of the British Medical Association held recently was one by Dr. Leonard Hill on the influence of sunlight and artificial light on health. It was, he pointed out, quite easy, by local concentration of an arc, or by a very hot sun, to heat parts of the body—for example, the head—to a high febrile temperature. Exposure in sun boxes or under glass might easily heat up the whole body. Overheating should be most carefully avoided. Cool open air and sun were good, hot midday sun was bad, for the treatment of surgical tuberculosis, as Rollier had found in the Alps. Chronic phthisis cases must be protected from heat and given exposure to cool morning sun or arc lamps in cool places. Active febrile cases should be treated by light with very great caution, by minimal doses—for example, sky shine, not sun—and by exposure to cool air on verandahs. Cases of arthritis, on the other hand, might be benefited by heat and ultra-violet rays together. Wounds and fevers did wonderfully well out-of-doors, as shown by war experience, and all hospitals should no longer be brick buildings but bungalows with open-air wards, verandahs, and unroofed open-air courts about which the beds could be moved according to the weather. To build new brick hospitals in cities on the old plan was out-of-date and unjustifiable.

They must teach people to get rid of smoke pollution, wear less clothes, and expose more of their skin to light, and then, with the help of arc baths and more playing fields, we could improve health in spite of the thousands of miles of mean streets which covered their manufacturing districts.

Girls, by wearing low open-necked blouses and short skirts, with artificial silk stockings, secured more ultra-violet rays. Men might well alter their dress and get rid of the close collar and long trousers. While exposure of the lower part of the leg to light and cool air had proved to be a preventive of varicose veins, over-exposure in cold weather might produce a kind of chilblain like erythema. Physiological knowledge as well as fashion should rule dress and prevent both over and under-exposure.

Dr. Hill added that it had been stated that artificial sun treatment could not approach the real article in curative effect. His experience, however, had shown that arc-light baths, properly regulated and accompanied by advice as to exposure to cool open air, exercise and diet, could effect cures in London which appeared to be no less good than those reported from Alpine Sanatoriums.

To eliminate tuberculosis from cattle, just as from human beings, the important point was to secure adequate exposure to light and air. The practice followed by many farmers of shutting up milch cows in byres during the winter and limiting ventilation, with the idea of promoting a bigger yield of milk by warmth of the byre, should be prohibited. Cattle might be given arc-light baths in winter no less than children in schools.

TREATMENT OF FRACTURES

In the Section of Surgery and Orthopedics, Mr. Gask, F.R.C.S., discussed the treatment of fractures, with special reference to its organization and teaching. He commented on the "slashing attack" delivered recently by Sir Robert Jones on "the methods by which fractures are being dealt with at the big teaching hospitals," but dissented from the view that patients suffering from fractures should be segregated and placed under the charge of specialists.

In the Section of Pathology and Bacteriology, Dr. Sidney Russ opened a discussion on the pathological basis of treatment by radiation. He pointed out that under natural conditions the surface of the body accommodated itself to light and to some extent to ultra-violet radiation, and submitted some evidence that a similar process of accommodation is seen in connection with X-rays and radium.

Dr. Russ further pointed out that the effects of radiation upon the tissues are unique—they do not in general resemble the effects upon inert media; so it seems that the safest guide in such exploration is not that of analogy to what occurs in ordinary gaseous and liquid media. In living tissues one is confronted with a complex which is continuously adjusting its equilibrium with contiguous or enveloping structures, and experimental methods appear more likely to be successful if the complex is kept in mind as such without the effort of reducing it to simple terms. One of the limitations of experiments on tissue cultures is that the cells are put under conditions different from what they would experience in the body; but this limitation is recognized by those employing the method, and valuable indications are to be expected from its use. No doubt, for a thoroughly satisfactory pathological basis of radiotherapy, there ought to be enough information to enable those who practise it to visualize the processes involved in the irradiation of a malignant mass from start to finish. While this has not been accomplished as yet, one by one the significant processes are being recognized. Dr. Russ ended by saying that there is nothing so depressing as being told that we are only at the beginning of the subject. He did not think that this was the case, but rather that they were in the middle of it.

ENDOCRINE THERAPY

Dr. Langdon Brown, in the Section of Medicine in England, and Professor Swale Vincent discussed endocrine therapy. The latter emphasized the difficulties which are apt to be met with in endocrine therapy. These, he said, were of two kinds. In the first place, there was the difficulty, common to all branches of therapeutics, of deciding for or against the value of a drug. It was useless to claim that a drug had done good unless there existed a moderately clear idea of what was going to happen if nothing had been done. This very obvious consideration was almost universally overlooked, even by medical men. The public had not yet even begun to grow suspicious. It swallowed gallons of medicine in blind faith, trusting either to the blatant advertisement of the drug vendor, or to the trust-inspiring manner of the practitioner. Many of the patent medicines were devised for spasmodic conditions, which usually lasted only for a limited period, after which the patient might be fairly well until the next attack. Such conditions were asthma and epilepsy. It was obviously very easy to establish a reputation for any remedy in these disorders, and Professor Vincent supposed there were more "cures" for these than for any other diseases, if coughs and colds were excluded. It was clear that great efforts to distinguish between post hoc and propter hoc must be made. Some sort of experiment must be carried out. Rigid and adequate controls must be instituted.

ARTHRITIS AND OTHER FORMS OF RHEUMATIC DISEASE

Rheumatism is beginning to receive the attention which on account of its deadliness and crippling effects is its due. On the whole, rheumatism in its various manifestations causes more mortality and invaliding than any disease. In Great Britain the medical profession are awakening to the seriousness of the rheumatic situation and are discussing ways and means to restrict its power for evil. A straw which shows the direction in which the wind is blowing is a letter published in the *Lancet*, July 11 last, signed by five members of the International Society of Medical Hydrology. In this letter it is pointed out that reports from England and Sweden place rheumatism in the front as a fatal and incapacitating disease. According to a report made by Dr. Kahlmeter, articular rheumatism comes first of the list of disabling maladies, accounting for 9.1 per cent. of the Swedish cases, as against 5.8 per cent. accounted for by pulmonary tuberculosis. In Holland and Germany it is stated that the disablement of workers from this cause is an equally serious problem.

A committee on rheumatism has now been appointed by the International Society of Medical Hydrology, with headquarters at 36 Devonshire Place, London W. This society will take the official reports on rheumatic diseases made in England and Sweden as the basis of its inquiries, which will have for their object some concerted action in the campaign against rheumatic disability in the countries most affected thereby.

Of those who signed the letter to the *Lancet*, Dr. L. J. Llewellyn has been a pioneer in urging that rheumatism may be largely prevented and in suggesting methods by which these life and health saving ends may be brought about.

At the meeting of the British Medical Association, held recently, the question of chronic and acute rheumatism was discussed at considerable length. Sir Humphry Rolleston, president of the Royal College of Physicians, opened a discussion on arthritis. He appears to hold with an infectious origin, or seems to believe that infection plays a considerable part in the causation of arthritis. Sir James Barr, on the other hand, testified his faith in the theory that arthritis is largely of dietetic origin, being mainly due to acid fermentation. However, the majority of the speakers leaned towards infection as a prominent factor.

Acute rheumatism was also dealt with, and it was agreed that acute rheumatism is one of the main causes, if not the main cause, of heart disease in children especially, and, of course, it was the opinion that if acute rheumatism in the young could be prevented or abated, fatal and invaliding heart disease would be prevented or abated, pari passu. It was suggested that steps should be taken in this direction.

In the Section of Neurology and Psychology, Sir Humphry Rolleston read a paper which was one of the most generally interesting of the meeting. It must be remembered, he said, that probably the bulk of patients in ordinary practice presented some disorder, however slight, of mind, conduct, or feeling, spoken of as "nerves," neurasthenia, night terrors, and that in this early stage of conditions, responsible for such an enormous amount of distress, proper treatment was most successful. Failure to deal efficiently and sympathetically with these minor disorders, which no doubt depended on the very scanty instruction available in the medical schools on this subject, might well, as Dr. L. Lewellys Barker had pointed out, account for some of the vogue of Christian Science and other forms of irregular practice.

The public as well as the doctors required education as to the way in which mental abnormalities should be regarded, and should be impressed with the similarity of mental and bodily disorders, and with the commonplace that prevention was better and cheaper than cure, so that the earliest departures from the normal should be at once communicated to the doctor and remedial measures started without delay, this step eventually becoming as much a matter of course as a visit to the dentist.

Referring to birth control, the speaker said that though it was a eugenic method, inasmuch as it tended to improve environmental conditions of the offspring, it was less drastic and difficult than standardized propagation of the human race, and was, of course, widely practised, though far more often amongst those whose offspring would be of value to the race than among the very poor, and thus had a dysgenic influence. The arguments against this practice were the risk of a falling population and the moral one that promiscuity would be favored; the latter was the same as that which had made many sincere and well-meaning people strenuous opponents of the prevention of venereal disease by "packets."

Sir Humphry Rolleston went on to discuss the influence of stress as an exciting factor in mental trouble. There was physical stress, e. g., a wound, an infection, a toxic factor, unhealthy environment, unsuitable diet; there was also psychical stress, e. g., worry, emotional strain, overwork. He gave as his opinion that as mental disorder may occur in its absence, hereditary tendency is not an essential factor in the etiology of insanity, though no attempt to minimize its importance as a disposing influence would be made. As might be expected, hereditary trait manifests itself earlier in life than do mental disorders due solely to stresses, toxic, infective or physical. Carswell estimated that while 43 per cent. of all cases have a constitutional basis, 67 per cent. of cases arising between the ages of 15 and 45 years are thus explained.

In the Section of Medical Sociology a discussion took place on "What should be the standard of purity in milk?"

Dr. William G. Savage, county medical officer of health, Somerset, urged that the public health administration make three demands as regards the milk supply: 1. That it should not serve as a vehicle for the transmission of infections or other diseases. 2. That its nutritive properties should not be impaired. 3. That nothing should be added to it of a chemical nature which might prejudice the consumer. He reviewed the present situation, and expressed the view that it was possible to obtain a clean milk supply at a cost which would not be prohibitive.

Mr. Wilfred Buckley, of the National Clean Milk Society, discussing "By what means can pure milk be obtained, and at what cost," said that he was satisfied that it is impossible at the present time for the majority of farmers to maintain tubercle-free herds, for various reasons. As a result of the classification of milk that was inaugurated by the Ministry of Food during the war, and which has been extended since by the Ministry of Health, in coöperation with the Ministry of Agriculture, the number of tubercle-free herds in England and Wales increased from two or three to upwards of one hundred and fifty, but it is not possible to deal with the question of the national milk supply upon the basis of anticipating that for many years to come the bulk of English milk can be produced under such conditions. But the production of milk of decent cleanliness is practicable. If the producers of England want to do it, if their leaders are courageous enough to lead and to teach progress, the entire milk supply that is at present used for liquid consumption can soon be raised to the Grade A standard.

STATE AID FOR HOSPITALS

The Ministry of Health has just issued a statement with regard to the Report of the Voluntary Hospital Commission on voluntary hospital accommodation in England and Wales, which has also just been published. While agreeing that the financial situation of the voluntary hospitals is more favorable, the report points out that the problem is by no means solved. For example, greater coördination between the various institutions is required to obtain both the greatest economy of working and accommodation. Additional accommodation recommended by local voluntary hospital committees outside of London amounts in England and Wales to 10,614 beds, and King Edward's Hospital Fund recommends an addition in London of 2,088 beds.

After considering the situation from all aspects, the Commission recommend that some measure of state assistance is essential. Failing such assistance, there is in most cases no prospect of essential extensions being undertaken within the next few years; and the Commission assert that "failure to meet the present needs of a growing population will not only entail a great amount of avoidable suffering, but it must also react to the prejudice of the voluntary system."

The Commission advise that at the present-day prices, excluding the cost of site, furniture and equipment, a reasonable figure for the cost of extending plain buildings of a utilitarian character would be $2,000 per bed, and they recommend that the state should provide 50 per cent. of the cost up to a maximum of $1,000 per bed on condition that the remainder of the expenditure is raised locally or is available from existing building funds.

CONNECTICUT DEPARTMENT OF HEALTH

MORBIDITY REPORT FOR THE WEEK ENDING AUGUST 15, 1925

Diphtheria	15	German measles	3
Last week	18	Influenza	1
Diphtheria bacilli carriers	9	Malaria	1
Typhoid fever	10	Pneumonia (broncho)	4
Last week	8	Pneumonia (lobar)	7
Scarlet fever	15	Poliomyelitis	5
Last week	24	Tuberculosis, pulmonary	15
Measles	15	Tuberculosis, other forms	5
Last week	15	Gonorrhea	14
Whooping cough	46	Syphilis	8
Last week	83		
Chickenpox	3		

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

DISEASES REPORTED FOR THE WEEK ENDING AUGUST 8, 1925

Anterior poliomyelitis	3	Pellagra	1
Chickenpox	15	Pneumonia, lobar	17
Diphtheria	37	Scarlet fever	62
Dog-bite	12	Syphilis	37
Dysentery	4	Suppurative conjunctivitis	11
Encephalitis lethargica	2	Tetanus	2
Epidemic cerebrospinal meningitis	2	Trachoma	2
German measles	7	Trichinosis	1
Gonorrhea	98	Tuberculosis, pulmonary	84
Hookworm	3	Tuberculosis, other forms	9
Influenza	4	Tuberculosis, hilum	1
Measles	90	Typhoid fever	8
Mumps	11	Whooping cough	119
Ophthalmia neonatorum	8		

DISEASES REPORTED FOR THE WEEK ENDING AUGUST 15, 1925

Anterior poliomyelitis	3	Pellagra	4
Chickenpox	17	Pneumonia, lobar	13
Diphtheria	69	Scarlet fever	33
Dog-bite	7	Syphilis	61
Encephalitis lethargica	1	Suppurative conjunctivitis	2
Cerebrospinal meningitis	1	Tetanus	1
German measles	8	Trachoma	3
Gonorrhea	150	Tuberculosis, pulmonary	122
Hookworm	1	Tuberculosis, other forms	17
Measles	119	Tuberculosis, hilum	1
Mumps	8	Typhoid fever	20
Ophthalmia neonatorum	22	Whooping cough	146

Diseases Reported for the Week Ending August 22, 1925

Anterior poliomyelitis	9	Pellagra	2
Chickenpox	15	Pneumonia, lobar	21
Diphtheria	43	Scarlet fever	39
Dog-bite	7	Septic sore throat	1
Encephalitis lethargica	1	Syphilis	32
Epidemic cerebrospinal meningitis	2	Suppurative conjunctivitis	18
German measles	21	Trichinosis	1
Gonorrhea	109	Tuberculosis, pulmonary	104
Influenza	2	Tuberculosis, other forms	10
Malaria	1	Tuberculosis, hilum	3
Measles	72	Typhoid fever	21
Mumps	11	Whooping cough	140
Ophthalmia neonatorum	26		

RESUME OF COMMUNICABLE DISEASES

Reported to the Massachusetts Department of Public Health, July, 1925

GENERAL PREVALENCE

Whooping cough was the only common communicable disease showing an increase over last month.

	July, 1925	June, 1925	July, 1924
Whooping cough	619	522	261

RARE DISEASES

Anterior poliomyelitis was reported from Boston, 2; Brookline, 1; Cambridge, 1; Haverhill, 1; Holyoke, 1; Lawrence, 1; Lowell, 1; Malden, 1; Medford, 1; Woburn, 1; total, 11.

Dog-bite requiring anti-rabic treatment was reported from Billerica, 4; Boston, 2; Chelmsford, 1; Everett, 2; Fall River, 1; Hudson, 1; Lowell, 13; Milton, 1; North Attleboro, 4; Revere, 4; Stoneham, 1; Weston, 1; Winthrop, 3; total, 38.

Encephalitis lethargica was reported from Attleboro, 1; Belmont, 1; Boston, 4; Haverhill, 1; Lowell, 1; New Bedford, 1; Northampton, 1; total, 10.

Epidemic cerebrospinal meningitis was reported from Boston, 2; Chelsea, 1; Leominster, 1; Newburyport, 1; Salem, 1; West Springfield, 1; total, 7.

Hookworm was reported from Boston, 1; Rockport, 1; total, 2.

Malaria was reported from Boston, 1.

Pellagra was reported from Boston, 3.

Septic sore throat was reported from Beverly, 2; Boston, 8; Somerville, 1; South Hadley, 1; total, 12.

Tetanus was reported from Boston, 1; Dudley, 1; Lynn, 1; Methuen, 1; Worcester, 1; total, 5.

Trachoma was reported from Boston, 4; Braintree, 1; Lowell, 1; West Springfield, 1; Worcester, 1; total, 8.

DISTRIBUTION

All Communicable Diseases

	July, 1925	July, 1924
Total cases (all causes)	4,347	4,167
Case rate per 100,000 population	107.7	104.1

Certain Prevalent Diseases

Diphtheria	July, 1925	July, 1924
Total cases	259	412
Case rate per 100,000 population	6.4	10.3

Measles	July, 1925	July, 1924
Total cases	1,037	939
Case rate per 100,000 population	25.7	23.5

Cities and towns noticeably exceeding their median endemic indexes*:

Fall River	(8)	46	Andover	(1)	9
New Bedford	(1)	34	Arlington	(13)	29
Lawrence	(17)	46	Billerica	(0)	10
Lowell	(10)	110	Worcester	(14)	81
Methuen	(0)	44			

Scarlet Fever	July, 1925	July, 1924
Total cases	269	381
Case rate per 100,000 population	6.7	9.5

Tuberculosis, Pulmonary	July, 1925	July, 1924
Total cases	448	477
Case rate per 100,000 population	11.1	11.9

Tuberculosis, Other Forms	July, 1925	July, 1924
Total cases	78	78
Case rate per 100,000 population	1.9	1.9

Typhoid Fever	July, 1925	July, 1924
Total cases	82	49
Case rate per 100,000 population	2.0	1.2

Whooping Cough	July, 1925	July, 1924
Total cases	619	261
Case rate per 100,000 population	15.3	6.5

Cities and towns noticeably exceeding their median endemic indexes*:

Boston	(59)	152	Shirley	(0)	39
Brockton	(22)	39	Worcester	(11)	43
Everett	(1)	15	Holyoke	(1)	20
Methuen	(4)	29			

*The median endemic index is obtained by arranging in arithmetical sequence the monthly totals of reported cases for the past five years and selecting the middle figure. The numbers in parentheses after the name of each city and town indicate the median endemic index for that city or town; the numbers without parentheses indicate the cases reported during the current month.

NEWS ITEMS

THE AWARD OF THE ALVARENGA PRIZE OF 1925—Dr. Raphael Isaacs, assistant physician to the Collis P. Huntington Memorial Hospital of Harvard University and instructor in medicine in the Harvard Medical School, has been awarded the Alvarenga prize for the year 1925 by the College of Physicians of Philadelphia. This prize is open to international competition. It is awarded annually, "provided an essay deemed by the committee of award worthy of the prize shall have been offered." The essays were restricted to any subject in medicine not previously published. The title of Dr. Isaacs' paper was "On the Nature and Action of the Roentgen Rays on Living Tissue." It will be published in the Transactions of the Philadelphia College of Physicians and in one of the medical journals. Dr. Isaacs' investigations have been made during the past two years since he has held a full-time position with the newly developed medical service of the Huntington Hospital.

THE FRAMINGHAM HOSPITAL AND THE UNION AVENUE HOSPITAL OF FRAMINGHAM have merged under the name of the Framingham Union Hospital. For a time the two institutions will be conducted as at present. As soon as possible an appeal will be made for funds to erect a new hospital building on the grounds of the Framingham Hospital adequate for the needs of this rapidly growing community.

INTER-STATE POST-GRADUATE ASSEMBLY OF AMERICA—Among those who have accepted invitations to appear on the scientific program of the Inter-State Post-Graduate Assembly of America, to be held in St. Paul, Minn., October 12-16, are Dr. Nathaniel Allison, Dr. James H. Means, Dr. William P. Graves, Dr. Walter B. Cannon and Dr. Milton J. Rosenau of Boston, Dr. Hugh Cabot of Ann Arbor, Mich., and Dr. Wilder Tileston of New Haven.

FOUR WESTERN COUNTY MEDICAL SOCIETIES TO BE ENTERTAINED AT THE BELCHERTOWN STATE SCHOOL—The trustees of the Belchertown State School have invited the members of the District Medical Societies of the Massachusetts Medical Society in the four western counties to meet at the school on Tuesday, September 15, 1925.

The program: 1:30 P. M.—Dinner. 2:30 P. M.—Short discussion of the school work. 3 P. M.—Opportunity to visit the various departments of the school with the purpose of viewing their functions.

For those who desire to play baseball or tennis the athletic field and tennis courts will be available.

The school classes will be in session and industrial shops and other points of interest open to inspection of the visitors.

INTERNATIONAL POST-GRADUATE COURSES IN BERLIN will be organized for October, 1925, under the active participation of the faculty of medicine of Berlin University.

The following arrangements are prepared:

I. Special courses on all medical branch disciplines, especially the subjects that are just now of intense interest. These courses include practical exercises.

II. Cycle of lectures on the disciplines confining on internal medicine. This cycle intends to show importance of the specialist for general practice in difficult internal cases in both diagnosis and therapy.

III. Systematic review on the progress of medical science and technics.

IV. Post-graduate course for oculists.

For details and programs ask the office of the International Post-Graduate Courses, Berlin NW. 6, Kaiserin Friedrich-Haus für das ärztliche Fortbildungswesen, Luisenplatz 2-4.

DOCTORS LESS PROSPEROUS THAN WAITERS IN GERMANY—Although doctors, lawyers and dentists are more prosperous in Berlin than formerly, as shown by deposits in banks, waiters in cafés and hotels show the largest increase in savings of any class of laborers.

DR. HARVEY H. HOWARD—The late reports are that the Chinese bandits holding Dr. Howard are surrounded by the military forces, but rather than place the prisoner in jeopardy no attack has been made and negotiations are in progress for his release.

DIPHTHERIA, 1924—The following is from a special report on "Diphtheria for the Year 1924" by Dr. Louis I. Harris, director of the Bureau of Preventable Diseases, New York City:

"During 1924 there were 9,687 cases of diphtheria reported, as compared with 8,050 in the year 1923. The increase was not confined to any one or two boroughs, but was present in each of them. There was also a notable increase in the number of deaths from diphtheria. In 1923, there were 554 deaths; in 1924 there were 714 deaths, an increase of practically 30 per cent.

"Since the employment of diphtheria antitoxin was begun in 1894, a very signal reduction in the death rate, and in the case rate as well, as attested by the therapeutic and preventive value of this remedy, have occurred. . . . The brilliant results achieved through the use of diphtheria antitoxin are known to the intelligent members of the public."

NOTICES

NOTICE OF EXAMINATION FOR ENTRANCE INTO THE REGULAR CORPS OF THE UNITED STATES PUBLIC HEALTH SERVICE

It has been recently announced by Surgeon General Cumming of the U. S. Public Health Service that on Sept. 14, 1925, examinations of candidates for entrance into the Regular Corps of the U. S. Public Health Service, will be held at Washington, D. C.; Chicago, Illinois; New Orleans, Louisiana and San Francisco, California.

Candidates must be not less than twenty-three nor more than thirty-two years of age, and they must have been graduated in medicine at some reputable medical college, and have had one year's hospital experience or two years' profesisonal practice. They muts pass satisfactorily, oral, written and clinical tests before a Board of medical officers and undergo a physical examination.

Successful candidates will be recommended for appointment by the President with the advice and consent of the Senate.

Requests for information for permission to take this examination should be addressed to the Surgeon General, U. S. Public Health Service, Washington, D. C.

UNITED STATES CIVIL SERVICE EXAMINATIONS

JUNIOR MEDICAL OFFICER, ASSISTANT MEDICAL OFFICER, ASSOCIATE MEDICAL OFFICER, MEDICAL OFFICER, SENIOR MEDICAL OFFICER

Applications Will Be Rated as Received Until December 30, 1925

The United States Civil Service Commission announces open competitive examinations under the above titles for filling vacancies occurring in the Federal classified civil service throughout the United States.

Salaries and conditions of employment—For positions in the departmental service, Washington, D. C., the entrance salaries are: Junior medical officer, $1860 a year; assistant medical officer, $2400 a year; associate medical officer, $3000 a year; medical officer, $3800 a year, and senior medical officer, $5200 a year.

Indian Service—The entrance salary for physician in the Indian Service ranges from $1860 to $2400 a year (usually $1860), with quarters, heat, and light. Employees and members of their families have the privilege of boarding at the "club" (where one is established) at a cost of from $16 to $20 a month; children under 12 usually paying half rates. The Government furnishes all drugs and equipment and means of transportation.

Public Health Service—The entrance salary for assistant medical officer, Public Health Service, is $2400 to $3000, and for associate medical officer is $3000 to $3600.

Coast and Geodetic Survey—The entrance salary for surgeon in the Coast and Geodetic Survey is $1680 a year, with allowance for subsistence at $2 per diem, except in the Philippines, where the allowance for subsistence is $2.50 per diem.

Panama Canal—The entrance salary for physician, Panama Canal Service, is $250 a month; promotion may be made to $275, $300, $325 and $360, and to higher rates for special positions.

Veterans' Bureau, Field Service—Positions of physician and medical examiner, for full-time duty: Interne (Junior Medical Officer register), $1200 a year with quarters, subsistence, and laundry. Associate Medical Officer, salary range $3300 to $3900, entrance salary $3300. Medical Officer, salary range $3800 to $5000, entrance salary $3800. Senior Medical Officer, salary range $5200 to $6000, entrance salary $5200. Appointments to fill existent vacancies will be from examinations held for the several grades.

Optional Branches — The eligibles resulting from these examinations will be placed on registers and certified according to their qualifications in the branches listed below. Applicants must indicate clearly in their applications the number and title of the branches of medicine or surgery and the grade for which they desire to qualify.

1. General medicine and surgery (general practice) in junior, assistant, and associate grades and for specialists in the following:

In assistant, associate, medical officer, and senior grades only—

2. Tuberculosis.
3. Neuropsychiatry (either or combined).
4. Roentgenology.
5. Physiotherapy.
6. Bacteriology.
7. Public health practice (including control of communicable disease).
8. Industrial medicine and hygiene.
9. Child hygiene.

In associate, medical officer, and senior grades only—

10. Eye, ear, nose, and throat (separately or in combination).
11. Orthopedic surgery and prosthetics.
12. Internal medicine and diagnosis.
13. General surgery.
14. Gastro-intestinal surgery.
15. Genito-urinary surgery.
16. Dermatology.
17. Medical administration.

Application can be filed for only one specialty, but an additional application may be filed in general medicine and surgery.

Further particulars furnished on application to the United States Civil Service Commission.

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REPORTS AND NOTICES OF MEETINGS*

ANNUAL MEETING OF THE NEW HAMPSHIRE MEDICAL SOCIETY

THE 134th annual meeting of the New Hampshire Medical Society was held at the Hotel Carpenter, Manchester, New Hampshire, May 19-20, 1925. The Manchester Medical Association was delegated to serve as the committee of arrangements, acting under the direction of the following officers of the state society:

President—Louis W. Flanders, Dover.

Vice-President—Thomas W. Luce, Portsmouth.

Secretary-Treasurer—D. E. Sullivan, Concord.

COMMITTEE ON SCIENTIFIC WORK

Secretary-Treasurer—R. H. Brooks, Claremont; O. H. Hubbard, Keene.

The scientific program was carried out as follows:

GENERAL MEETING

Carpenter Hotel Ball Room, Tuesday, May 19, 10:30 A. M.

Call to order by the President.
Invocation by Chaplain.
Introduction of visiting Delegates.

Round Table Discussion

"Cancer"
Fred E. Clow, Wolfeboro

"Indigestion"
A. W. Mitchell, Epping

"Preventive Measures Available Among School Children"
Robert H. Brooks, Claremont

Discussion opened by James H. Townsend, Concord; Charles B. Drake, West Lebanon.

"Operative Treatment of Fractures"
Clifton S. Abbott, Laconia

Discussion opened by Chester L. Smart, Laconia; Ezra Z. Jones, Manchester.

TUESDAY, MAY 19, 2 P. M.

President's Address
Louis W. Flanders, Dover

"Observations of the Medical Treatment of Ulcers of the Stomach"
Jeremiah J. Morin, Rochester

Discussion opened by George C. Rublee, Rochester; Thomas J. Morrison, Somersworth.

"Myocarditis"
Wendell Phillips Clare, Portsmouth

Discussion opened by Donald C. McLachlan, Greenland; Lawrence R. Hazzard, Portsmouth.

WEDNESDAY, MAY 20, 10 A. M.

"Brain Tumor: Diagnosis with Case Report"
A. Gale Straw, Manchester

Discussion opened by John F. Holmes, Manchester; John H. Gleason, Manchester.

"Local Anesthesia in Major Surgery"
Arthur T. Downing, Littleton

Discussion opened by James B. Woodman, Franklin; Hiram L. Johnson, Franconia.

"Early Diagnosis of Pulmonary Tuberculosis; Brief Resume of Artificial Pneumo-Thorax"
Robert M. Deming and J. C. Dundee
(Glencliff Sanatorium)

Discussion opened by Fred E. Clow, Wolfeboro; Arthur F. Wheat, Manchester.

"Infantile Paralysis; History, Diagnosis and Treatment"
Louis C. Ager, Warner

Discussion opened by Carleton R. Metcalf, Concord; Frank N. Rogers, Manchester.

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*Notices of meetings must reach the JOURNAL office on the Friday preceding the date of issue in which they are to appear.

Reports of Two Cases

"A Case of Purulent Pericarditis"

A. W. Shea, Nashua

"Congenital Abnormal Heart: Autopsy"

R. W. Holmes, Keene

Wednesday, May 20, 2 P. M.

"Synergistic Analgesia in Obstetrics: A Report of Twenty-Five Cases"

Loren F. Richards, Dublin

Discussion opened by Joseph R. Helff, Keene; Frederick P. Scribner, Manchester.

"Principals of Underwriting Sub-Standard Risks"

Robert J. Graves, Concord

Discussion opened by Henry H. Amsden, Concord; Mr. John V. Hanna, Concord.

"Acute Conditions of the Abdomen"

John C. Lawlor, Dover

Discussion opened by Benjamin G. Moran, Nashua; Edward C. Batchelder, Dover.

"Diagnosis and Management of Biliary Disease"

Frank H. Lahey, Boston, Mass.

Discussion opened by Augustus W. Shea, Nashua; Emery M. Fitch, Claremont.

The papers were all very well prepared and presented and brought forth a great deal of valuable discussion.

An especial effort was made during the meeting to entertain the visiting ladies, and on the afternoon of the first day, by courtesy of the Amoskeag Manufacturing Company as arranged by the ladies reception and entertainment committee of the committee of arrangements, the ladies were shown through the worsted department of the Amoskeag mills. And on the afternoon of the second day they were entertained with a card party and tea at the Manchester Country Club. They were also present at the general reception Tuesday evening at the Country Club, and the Banquet Wednesday evening at the Carpenter Hotel.

One of the pleasant features of the first day was a reception given in the evening at the Manchester Country Club by the Manchester physicians to the visiting members and their guests. As arranged by the entertainment committee of the committee of arrangements, this reception was given in the interest of good fellowship and a better understanding, and consisted of a dinner, after dinner remarks, etertainment and dancing. The club house was filled to capacity.

The annual banquet held in the Ball Room of the Carpenter Hotel, as arranged by the anniversary chairman assisted by the Banquet Committee of the committee of arrangements was unusually brilliant and well attended. The after dinner speakers were:

Anniversary Chairman David W. Parker, Incoming President Thomas W. Luce, M.D., Retiring President Louis W. Flanders, M. D., Governor John G. Winant, Superintendent of Manchester Schools Louis P. Benezet, United States Senator George H. Moses.

The commercial exhibit was very large and there were several health exhibits including the leading health organizations of the state. The exhibitors were generous and courteous and received many fine compliments. In the course of the business meeting, the sum of $500 was appropriated for the "Gorgas Memorial Fund." The following resolutions were passed:

A resolution in favor of world peace with a request that our United States Senators support the measure in the Senate.

A resolution disapproving of the tax under the Harrison Narcotic Law.

A resolution disapproving tax on traveling expenses necessary for attending medical society meetings and tax on expense of postgraduate study.

A resolution in favor of periodic medical examinations by the family physician, but disapproving such work by outside so-called "Health Services."

Dr. Inez Nason of Dover was made chairman of a committee to consider the formation of a ladies auxiliary to the New Hampshire State Medical Society.

A new position that of news correspondent from New Hampshire to the American Medical Journal and the Boston Medical and Surgical Journal was created, the appointee to be named by the President of the state society.

It was decided to hold the next meeting at Concord, N. H., some Tuesday and Wednesday in May, 1926.

The following officers were elected:

President—T. W. Luce, Portsmouth.

Vice-President—J. H. Gleason, Manchester.

Secretary-Treasurer—D. E. Sullivan, Concord.

Councilors—H. H. Amsden, Merrimack County; G. C. Wilkins, Hillsborough; F. E. Clow, Carroll.

Trustees—Chancey Adams, Concord; Ira J. Prouty, Keene.

Speaker House of Delegates—H. O. Smith, Hudson.

Vice Speaker House of Delegates—J. J. Cobb, Berlin.

Delegate Council on Medical Education and Hospitals—Elmer H. Carleton, Hanover.

Delegate Bureau of Health and Public Instruction A. M. A.—Howard A. Streeter, Manchester.

Anniversary Chairman—J. W. Jameson, Concord.

Necrologist—George H. Clarke, Concord.

Committees

Public Policy and Legislation—H. H. Amsden, Concord; J. J. Powers, Manchester; J. B. Woodman, Franklin; President and Secretary-

Treasurer ex-officio.

Scientific Work—R. H. Brooks, Claremont; O. H. Hubbard, Keene.

Arrangements—County Medical Society.

Publication—Secertary-Treasurer, President, Vice-President.

Tuberculosis—R. B. Kerr, Pembroke; S. R. Upham, Claremont; Robert W. Deming, Glencliff.

Medical Hygiene—C. H. Dolloff, Concord; B. W. Baker, Laconia; A. E. Brownrigg, Nashua.

Control of Cancer—F. E. Clow, Wolfeboro; C. R. Metcalf, Concord; H. N. Kingsford, Hanover.

The meeting was probably the largest in the history of the Society and equally enthusiastic, and there was a kindly coöperative friendliness manifest at all times.

WACHUSETT MEDICAL IMPROVEMENT SOCIETY

The next regular meeting of the Wachusett Medical Improvement Society will be held at Holden District Hospital on Wednesday evening, September 2nd. Dr. John F. Curran will read a paper entitled: "Echinococcus Cysts," and Dr. William T. Knowlton will read a paper entitled: "Lympho-Sarcoma."

Yours truly,
O. D. Phelps, M. D., *Sec'y.*

The Annual Convention of the Medical Mission Section of the Catholic Hospital Association will be held August 29th-30th, 1925, at Font Hill Castle, College of Mount St. Vincent-on-Hudson, New York City.

PHYSIOTHERAPEUTIC CONVENTION

Physicians are invited to attend the Fourth Annual Physiotherapeutic Convention to be held at the Drake Hotel, Chicago, October 12 to 16, 1925. Papers will be read and discussed by leading physicians of National and International reputation in this field. For particulars see page program in this issue. Demontrations and exhibits of the latest apparatus and methods employed in physiotherapy will be given. Physicians who are in good standing in their State Medical Association and can give evidence of that fact are invited. Reservations may be made and programs obtained by addressing the Educational Department of H. C. Fischer & Company, 2335 Wabansia Ave., Chicago, Ill.

PROGRAM
INTER-STATE POST-GRADUATE ASSEMBLY OF AMERICA

General headquarters for all scientific sessions and exhibits: St. Paul Auditorium.

Hotel headquarters: St. Paul Hotel.

St. Paul, Minnesota

October 12th, 13th, 14th, 15th and 16th, 1925

FIRST DAY

Monday, October 12th

7 A. M.

1. Diagnostic Clinic (Medical).
   Dr. Charles S. Williamson, Prof. of Medicine, University of Illinois College of Medicine, Chicago, Illinois.
2. Diagnostic Clinic (Surgical).
   Dr. William S. Baer, Associate Prof. of Orthopedic Surgery, Johns Hopkins University Medical Dept., Baltimore, Md.
3. Diagnostic Clinic (Oto-laryngology).
   Dr. Hanau W. Loeb, Dean and Prof. of Ear, Nose and Throat Diseases, St. Louis University School of Medicine, St. Louis, Missouri.

Intermission

Review Exhibits

4. Diagnostic Clinic (Surgical).
   Dr. E. Starr Judd, Prof. of Surgery, Minnesota Graduate School of Medicine, Rochester, Minnesota.
5. Diagnostic Clinic (Surgical). (a) Nonspecific lung suppuration, such as bronchiectasis or bronchiectatic abscess of the lung in combination with a patient suffering from pulmonary tuberculosis.
   (b) Cancer of the esophagus, breast, thromboangiitis obliterans, cholecystitis with or without stones.
   Dr. Willy Meyer, Prof. of Surgery, New York Post-Graduate School of Medicine, New York, N. Y.

Afternoon Session

1 P. M.

6. Diagnostic Clinic (Medical). Arterial hypertension, diseases of the heart and kidney.
   Dr. Elsworth S. Smith, Prof. of Clinical Medicine, Washington University School of Medicine, St. Louis, Missouri.
7. Diagnostic Clinic (Surgical). General surgical cases.
   Dr. Arthur M. Shipley, Prof. of Surgery, University of Maryland School of Medicine, Baltimore, Maryland.
8. Diagnostic Clinic (Surgical).
   Dr. George J. Heuer, Prof. of Surgery, University of Cincinnati, College of Medicine, Cincinnati, Ohio.
9. Diagnostic Clinic (Medical).
   Dr. William J. Kerr, Associate Prof. of Medicine, University of California, San Francisco, California.
10. "Chronic Infections of the Skull."
    Dr. Charles B. Lyman, Prof. of Clinical Surgery, University of Colorado, School of Medicine, Denver, Colorado.

11. Subject later.
    Dr. Charles S. Williamson, Prof. of Medicine, University of Illinois College of Medicine, Chicago, Illinois.

Intermission

Review Exhibits

12. Subject later.
    Dr. William S. Baer, Associate Prof. of Orthopedic Surgery, Johns Hopkins University Medical Dept., Baltimore, Md.
13. Subject later.
    Dr. C. J. MacGuire, Jr., New York, N. Y.
14. "The Anatomic Relation of the Optic Nerve to the Para-Nasal Sinuses." (Slides.)
    Dr. Hanau W. Loeb, Dean and Prof. of Ear, Nose and Throat Diseases, St. Louis University School of Medicine, St. Louis, Missouri.

Evening Session

7 P. M.

15. "Pernicious Anemia."
    Dr. Edward W. Montgomery, Prof. of Medicine and Clinical Medicine, University of Manitoba Faculty of Medicine, Winnipeg, Canada.
16. "The Treatment of Cicatricial Contractures of the Neck."
    Dr. Charles N. Dowd, Prof. of Clinical Surgery, Columbia University School of Medicine, New York, N. Y.
17. "The Diagnosis and Treatment of Heart Disease."
    Dr. William J. Kerr, Associate Prof. of Medicine, University of California, San Francisco, California.
18. Subject later.
    Dr. E. Starr Judd, Prof. of Surgery, Minnesota Graduate School of Medicine, Rochester, Minnesota.

Intermission

Review Exhibits

19. "Examination of Para-Nasal Sinuses" (With clinical demonstrations and radiographs).
    Dr. Cornelius G. Coakley, Prof. of Laryngology and Otology, Columbia University School of Medicine, New York, N. Y.
20. "Newer Methods of Preliminary Medication and General Anesthesia" (lantern slides).
    Dr. James T. Gwathmey, New York, N. Y.
21. "The Preparation and Use of Thick Skin Grafts." (Slides.)
    Dr. Harry P. Ritchie, Associate Prof. of Surgery, University of Minnesota Graduate School of Medicine, St. Paul, Minnesota.

SECOND DAY

Tuesday, October 13th

7 A. M.

1. Diagnostic Clinic (laryngology).
   Dr. Cornelius G. Coakley, Prof. of Laryngology and Otology, Columbia University School of Medicine, New York, N. Y.
2. Diagnostic Clinic (Surgical). Neck cases, especially T. B., bronchial cysts or fistulae thyroglossal cysts, or fistulae hygromas.
   Dr. Charles N. Dowd, Prof. of Clinical Surgery, Columbia University School of Medicine, New York, N. Y.
3. Diagnostic Clinic (Medical). Bone, cardio-vascular, blood or gastro-intestinal cases.
   Dr. Joseph Sailer, Prof. of Clinical Medicine, University of Pennsylvania School of Medicine, Philadelphia, Pa.

Intermission

Review Exhibits

4. Diagnostic Clinic (Surgical). Cranial and general surgical cases.
   Dr. Samuel Clark Harvey, Associate Prof. of Surgery, Yale University School of Medicine, New Haven, Conn.
5. Diagnostic Clinic (Surgical). Upper abdominal cases.
   Dr. John B. Deaver, Prof. of Surgery, University of Pennsylvania School of Medicine, Philadelphia, Pa.

Afternoon Session

1 P. M.

6. Diagnostic Clinic (Diabetic).
   Dr. Rollin T. Woodyatt, Clinical Prof. of Medicine, Rush Medical College, Chicago, Illinois.
7. Diagnostic Clinic (Surgical). Surgery of the Face and Various Parts of the Body.
   Dr. Allen B. Kanavel, Prof. of Surgery, Northwestern University School of Medicine, Chicago, Illinois.
8. Diagnostic Clinic (Medical). Heart and Lung cases.
   Dr. Edward J. Beardsley, Associate Prof. of Medicine, Jefferson Medical College, Philadelphia, Pa.
9. "The Role of Operative Surgery in the Treatment of Pulmonary Tuberculosis." (Slides.)
   Dr. Willy Meyer, Prof. of Surgery, New York Post-Graduate School of Medicine, New York, N. Y.

Intermission

Review Exhibits

10. "Hypertension."
    Dr. James H. Means, Prof. of Clinical Medicine, Harvard University School of Medicine, Boston, Mass.

11. "Observations on the Gall Bladder."
Dr. Frank Boland, Prof. of Surgery, Emory University School of Medicine, Atlanta, Georgia.

12. "Thoracic Suppurations."
Dr. Arthur M. Shipley, Prof. of Surgery, University of Maryland, School of Medicine, Baltimore, Maryland.

13. "Pyloric Stenosis."
Dr. E. E. Francis, Prof. of Surgery, University of Tennessee, School of Medicine, Memphis, Tennessee.

Evening Session

7 P. M.

14. "The Treatment of Cardiac Syphilis."
Dr. Harlow Brooks, Prof. of Clinical Medicine, University and Bellevue Hospital Medical College, New York, N. Y.

15. "Plastic Surgery."
Dr. Allen B. Kanavel, Prof. of Surgery, Northwestern University School of Medicine, Chicago, Illinois.

16. "Heliotherapy as an Adjunct in the Treatment of Chronic Surgical Conditions."
Dr. George J. Heuer, Prof. of Surgery, University of Cincinnati, College of Medicine, Cincinnati, Ohio.

17. "Further Studies Concerning the Injurious Effects of Arterial Hypertension on the Cardio-Vascular Renal Apparatus."
Dr. Elsworth S. Smith,. Prof. of Clinical Medicine, Washington University School of Medicine, St. Louis, Missouri.

Intermission

Review Exhibits

18. "The Relation of the Human Constitution to Disease."
Dr. George Draper, New York, N. Y.

19. Subject later.
Dr. Milton J. Rosenau, Prof. of Preventive Medicine and Hygiene, Brookline, Boston, Mass.

20. "Drainage as a Factor in Renal Disease." (Slides.)
Dr. Guy L. Hunner, Associate Prof. of Gynaecology, Johns Hopkins University School of Medicine, Baltimore, Maryland.

THIRD DAY

Wednesday, October 14th

7 A. M.

1. Diagnostic Clinic (Medical). Cases of Cardiac syphilis, cardiac decompensation, lung tumors or abscess, acute rheumatic fever, angina pectoris, chronic nephritis.
Dr. Harlow Brooks, Prof. of Clinical Medicine, University and Bellevue Hospital Medical College, New York, N. Y.

2. Diagnostic Clinic (Gynaecology).
Dr. Guy L. Hunner, Associate Prof. of Gynaecology, Johns Hopkins University School of Medicine, Baltimore, Maryland.

3. Diagnostic Clinic (Psychiatry).
Dr. Thomas W. Salmon, Prof. of Psychiatry, Columbia University School of Medicine, New York, N. Y.

Intermission

Review Exhibits

4. Diagnostic Clinic (Medical). Hypertensive diseases.
Dr. James H. Means, Prof. of Clinical Medicine, Harvard University School of Medicine, Boston, Mass.

5. Diagnostic Clinic (Surgical). Cases of rheumatism or rheumatoid arthritis.
Dr. Charles H. Mayo, Mayo Clinic, Rochester, Minnesota.

Afternoon Session

1 P. M.

6. Pathological Conference supervised by Dr. H. E. Robertson, Prof. of Pathology, University of Minnesota (Mayo Foundation), Rochester, Minnesota.

7. Diagnostic Clinic (Medical). Cardio-vascular diseases or diseases of the blood.
Dr. Maurice C. Pincoffs, Prof. of Medicine, University of Maryland, School of Medicine, Baltimore, Maryland.

8. "Familiar Problems in Gynaecology."
Dr. William P. Graves, Prof. of Gynaecology, Harvard University School of Medicine, Boston, Mass.

9. "Diphtheria and its After Effects."
Dr. H. B. Cushing, Clinical Prof. of Pediatrics, McGill University Faculty of Medicine, Montreal, Canada.

Intermission

Review Exhibits

10. "Duodenal Ulcer versus Cholecystitis."
Dr. John B. Deaver, Prof. of Surgery, University of Pennsylvania School of Medicine, Philadelphia, Pa.

11. "Some Recent Revelations of the Denervated Heart."
Dr. Walter B. Cannon, Prof. of Physiology, Harvard University School of Medicine, Boston, Mass.

12. "The Significance of Arterial Hypertension."
Dr. Wilder Tileston, Clinical Prof. of Medicine, Yale University School of Medicine, New Haven, Conn.

13. "Carcinoma of the Rectum."
Dr. Alfred T. Bazin, Prof. of Surgery, McGill University Faculty of Medicine, Montreal, Canada.

Evening Session

7 P. M.

14. "The Diagnosis of Abdominal Tumors." (Slides.)
    Dr. Joseph Sailer, Prof. of Clinical Medicine, University of Pennsylvania School of Medicine, Philadelphia, Pa.
15. "The Liver and its Function in Relation to its Surgical Diseases."
    Dr. Samuel Clark Harvey, Associate Prof. of Surgery, Yale University School of Medicine, New Haven, Conn.
16. "Renal and Ureteral Stones."
    Dr. Edward L. Keyes, Prof. of Clinical Surgery, Department of Urology, Cornell University School of Medicine, New York, N. Y.
17. "Post-Graduate Instruction in our own offices."
    Dr. Edward J. Beardsley, Associate Prof. of Medicine, Jefferson Medical College, Philadelphia, Pa.

Intermission

Review Exhibits

18. "Ostectomy of the Os Calcis for Extreme Cases of Flat Feet." (Slides.)
    Dr. John P. Lord, Prof. of Orthopedic Surgery, University of Nebraska, School of Medicine, Omaha, Nebr.
19. "Treatment and Prognosis in Pericarditis."
    Dr. Maurice C. Pincoffs, Prof. of Medicine, University of Maryland School of Medicine, Baltimore, Md.
20. "Modern Medical Education—Progress or Retrogression."
    Dr. Eugene E. Murphey, Prof. of Medicine, University of Georgia School of Medicine, Augusta, Georgia.

FOURTH DAY

Thursday, October 15th

7 A. M.

1. Diagnostic Clinic (Surgical). Renal and ureteral stone cases.
   Dr. Edward L. Keyes, Prof. of Clinical Surgery, Department of Urology, Cornell University School of Medicine, New York, N. Y.
2. Diagnostic Clinic (Pediatric). Rheumatic fever and after effects in children of school age.
   Dr. H. B. Cushing, Clinical Prof. of Pediatrics, McGill University Faculty of Medicine, Montreal, Canada.
3. Diagnostic Clinic (Surgical). Acute abdominal lesion cases.
   Dr. Alfred T. Bazin, Prof. of Surgery, McGill University Faculty of Medicine, Montreal, Canada.

Intermission

Review Exhibits

4. Diagnostic Clinic (Surgical).
   Dr. Arthur Dean Bevan, Prof. of Surgery, Rush Medical College, Chicago, Illinois.
5. "The Five Most Important Obstetrical Mistakes."
   Dr. Joseph B. DeLee, Prof. of Obstetrics, Northwestern University School of Medicine, Chicago, Illinois.

Afternoon Session

1 P. M.

6. Diagnostic Clinic (Medical). Abdominal diseases, especially liver.
   Dr. Wilder Tileston, Clinical Prof. of Medicine, Yale University School of Medicine, New Haven, Conn.
7. Diagnostic Clinic (Surgical). Management of cases of prostatic obstruction.
   Dr. Hugh Cabot, Prof. of Surgery, University of Michigan School of Medicine, Ann Arbor, Michigan.
8. "Pheumococcus Peritonitis."
   Dr. Charles L. Gibson, Prof. of Surgery, Cornell University School of Medicine, New York, N. Y.
9. "Focal Infection."
   Dr. Charles H. Mayo, Mayo Clinic, Rochester, Minnesota.

Intermission

Review Exhibits

10. "The Aetiology of Anaemia and Its Importance in Diagnosis and Treatment."
    Dr. Duncan A. L. Graham, Prof. of Medicine, University of Toronto, Faculty of Medicine, Toronto, Canada.
11. "A Re-study of Operations for Radical Cure of Hernia, Including Inguinal, Femoral, Umbilical, Postoperative, Hernias Associated with Undescended Testis and Diaphragmatic Hernia."
    Dr. Arthur Dean Bevan, Prof. of Surgery, Rush Medical College, Chicago, Illinois.
12. Subject later.
    Mr. Philip Franklin, F. R. C. S., London, England.
13. Subject later.
    Dr. Thomas W. Salmon, Prof. of Psychiatry, Columbia University School of Medicine, New York, N. Y.

Evening Session

7 P. M.

14. "The Relative Roles of Surgery and of Radiation in the Treatment of Tumors of the Breast."
    (a) Dr. F. E. Bunts, Prof. Principals of Surgery and Clinical Surgery, Western Reserve University School of Medicine, Cleveland, Ohio.
    (b) Dr. U. V. Portmann, Cleveland Clinic, Cleveland, Ohio.
15. "Joint Ankylosis—Surgical Measures for Its Prevention and Relief."

Dr. Nathaniel Allison, Prof. of Orthopedic Surgery, Harvard University School of Medicine, Boston, Mass.

16. "The Physiology of the Female Pelvic Floor."
Dr. Ernest F. Tucker, Prof. of Gynaecology, University of Oregon, School of Medicine, Portland, Oregon.

17. "Syphilis and Its Relation to Eye Diseases."
Dr. William H. Wilder, Prof. of Ophthalmology, Rush Medical College, Chicago, Illinois.

Intermission

Review Exhibits

18. "Diagnosis of Diseases of the Rectum."
Dr. L. J. Austin, Prof. of Surgery, Queen's University Faculty of Medicine, Kingston, Canada.

19. Subject later.
Dr. James E. Thompson, Prof. of Surgery, University of Texas School of Medicine, Galveston, Texas.

20. Subject later.
Dr. Arthur A. Law, Associate Prof. of Surgery, University of Minnesota Graduate School of Medicine, Minneapolis, Minn.

FIFTH DAY

Friday, October 16th

7 A. M.

1. Diagnostic Clinic (Surgical). Abdominal and gastro-intestinal cases.
Dr. Charles L. Gibson, Prof. of Surgery, Cornell University School of Medicine, New York, N. Y.

2. Diagnostic Clinic (Surgical). Joint involvement, particularly cases of suspected tuberculosis of either the knee, hip or other joints.
Dr. Nathaniel Allison, Prof. of Orthopedic Surgery, Harvard University School of Medicine, Boston, Mass.

3. Diagnostic Clinic (Medical). Cases of cardiac lesions or signs of interference with cardiac function.
Dr. J. C. Meakins, Prof. of Medicine and Director of the Department, McGill University Faculty of Medicine, Montreal, Canada.

Intermission

Review Exhibits

4. Diagnostic Clinic (Surgical).
Dr. George W. Crile, Prof. of Surgery, Western Reserve University School of Medicine, Cleveland, Ohio.

5. Diagnostic Clinic (Medical). Cases of anaemia and mediastinal tumor.
Dr. Duncan A. L. Graham, Prof. of Medicine, University of Toronto Faculty of Medicine, Toronto, Canada.

Afternoon Session

1 P. M.

6. Diagnostic Clinic (Surgical). Cases of Anaemia.
Dr. William J. Mayo, Mayo Clinic, Rochester, Minnesota.

7. Diagnostic Clinic (Surgical).
Sir William Arbuthnot Lane, Bt., London.

8. Pathological Conference supervised by Dr. H. E. Robertson, Prof. of Pathology, University of Minnesota (Mayo Foundation), Rochester, Minnesota.

9. "Circulatory Failure in Heart Disease."
Dr. J C. Meakins, Prof. of Medicine and Director of the Department, McGill University Faculty of Medicine, Montreal.

Intermission

10. "The Cause and Prevention of So-called Catheter Cystitis and Retention of the Urine."

11. "Treatment of Gastric Ulcer."
(a) "Indications for and the Technique of Dissection of the Stomach for Ulcer."
Dr. George W. Crile, Prof. of Surgery, Western Reserve University School of Medicine, Cleveland, Ohio.
(b) "The Medical Treatment of Gastric Ulcer."
Dr. John Phillips, Assistant Prof. of Therapeutics, Western Reserve University School of Medicine, Cleveland, Ohio.
(c) "The Patient Versus His Lesion."
Dr. George W. Crile, Cleveland, Ohio.

12. "The Association of Lesions of the Bone Marrow, the Liver and the Spleen in Certain Blood Dyscrasias."
Dr. William J. Mayo, Mayo Clinic, Rochester, Minnesota.

FOREIGN GUESTS

Sir William Arbuthnot Lane, London, England.
Mr. William Blair Bell, F. R. C. S., Prof. of Obstetrics and Gynaecology, University of Liverpool, England.
Professor Vittorio Putti, Bologna, Italy.
Mr. Philip Franklin, F.R.C.S., London, England.
Dr. H. L. McKisack, Consulting physician, Royal Victoria Hospital, Belfast, Ireland.
Dr. W. H. Parkes, C.M.G., C.B.E., Auckland, New Zealand.

BANQUET

Addresses by distinuished citizens from America and foreign countries.

SOCIETY MEETINGS

DISTRICT MEDICAL SOCIETIES

Essex North District Medical Society

Wednesday, September 2, 1925—At 2 P. M., a combined meeting with Essex South, Middlesex North, and Middlesex East, at Danvers State Hospital, Hathorne.

Wednesday, January 6, 1926—The semi-annual meeting at Haverhill.

Wednesday, May 5, 1926—The annual meeting at Lawrence.

NEW ENGLAND STATE MEDICAL SOCIETIES

The annual meetings of the New England State Medical Societies are scheduled as follows:

Vermont State Medical Society—St. Johnsbury, Oct. 15-16, 1925.

BOOK REVIEWS

Modern Surgery, General and Operative. By J. CHALMERS DA COSTA, M.D., LL.D., F. A. C. S., Samuel D. Gross Professor of Surgery, Jefferson Medical College, Philadelphia, Ninth Edition, Revised and Reset. Octavo of 1527 pages with 1200 illustrations, some in colors. Philadelphia and London: W. B. Saunders Company, 1925, cloth, $10.00 net.

Practitioners of surgery and those who have to do with students have for a number of years used either for reference or for teaching one of the various previous editions of Da Costa's Surgery. Now appears the Ninth edition, revised, reset and reprinted. It is more valuable than any of the previous editions because it is up to date, including, as it does, new methods of treatment, new illustrations and discussion of recent experimental work in surgery.

Some readers will miss chapters, which appeared in previous books, on Bacteriology, Asepsis and Bandaging, but these subjects are well able to stand on their own feet and can rightly be studied separately.

"Modern Surgery" Da Costa, is a book worthy of review by practitioners of surgery and one of the best text books for the education of those who are beginning their study of the subject.

BOOKS RECEIVED FOR REVIEW

Diabetes. Its Treatment by Insulin and Diet. By ORLANDO H. PETTY AND WILLIAM H. STONER. Philadelphia: F. A. Davis Company. 133 pages. Price, $1.50 net.

Diseases of Ear, Nose and Throat. By HAROLD HAYS. Philadelphia: F. A. Davis Company. 961 pages. Price, $10 net.

Statistical Methods for Research Workers. By R. A. FISHER. Edinburgh and London: Oliver and Boyd. 239 pages. Price, 15/net.

Surgical Clinics of North America. June, 1925. Vol. 5—No 3, May Clinic number. Philadelphia and London: W. B. Saunders Co. 893 pages. Price $12 and $16 per clinic year.

Pediatrics of the Past. By JOHN RUHRAH. New York: Paul B. Hoeber, Inc. 592 pages Price, $10.

Operating Room Procedure for Nurses and Internes. By HENRY C. FALK. New York and London: G. P. Putnam's Sons. 385 pages. Price, $2.50.

Handbook of Diagnosis: The Heart. By ROBERT H. NICHOLS. Boston: Hudson Printing Company. 148 pages.

The Nurses Text Book Series. By ABRAHAM LEVINSON. Philadelphia and New York: Lea & Febiger. 251 pages. Price, $2.50.

Diseases of the Bronchi, Lungs, and Pleura. By FREDERICK T. LORD. Philadelphia and New York: Lea & Febiger. 776 pages. Price, $8.00.

Synopsis of Midwifery and Gynaecology. By ALECK W. BOURNE. New York: William Wood & Company. 434 pages. Price, $4.50.

A Synopsis of Surgery. By ERNEST W. HEY GROVES. New York: William Wood & Company. 671 pages. Price, $5.00.

How To Live. By IRVING FISHER and EUGENE LYMAN FISK. New York and London: Funk & Wagnalls Company. 513 pages. Price, $2.00 net.

Chemistry of the Blood in Clinical Medicine. By O. L. V. DEWESSELOW. New York: William Wood & Co. 255 pages. Price, $4.50.

The Children's Bureau—Service Monographs of the United States Government, No. 21. Institute for Government Research. By JAMES A. TOBEY. Baltimore, Maryland: The Johns Hopkins Press. 83 pages. Price, $1.00.

Studies from the Rockefeller Institute for Medical Research—Reprints, Vol. LIII. New York: Rockefeller Institute for Medical Research. 617 pages. Price, $2.

Chirurgische Operationslehre für Studierende und Arzte. By PROF. DR. FRIEDRICH PELS LEUSDEN. Berlin and Vienna: Urban & Schwarzenberg. 832 pages. Price, M. geb. 18.-; geb. 21.-

Manual of Gynecology. By JOHN C. HIRST, 2nd Edition. Philadelphia and London: W. B. Saunders Co. 508 pages. Price, $3.50.

Physical Chemistry in Biology and Medicine. By J. F. McCLENDON. Philadelphia & London: W. B. Saunders Co. 425 pages. Price, $4.50.

American Illustrated Medical Dictionary. 13th edition. By W. A. NEWMAN DORLAND. Philadelphia & London: W. B. Saunders Co. 1344 pages. Price with index, $7.50; without index, $7.00.

Preventive Medicine. 2nd edition. By MARK F. BOYD. Philadelphia and London: W. B. Saunders Co. 429 pages. Price, $4.

A General Text-Book of Bacteriology. 8th edition. By EDWIN O. JORDAN. Phialdelphia and London: W. B. Saunders Co. 752 pages. Price, $5.